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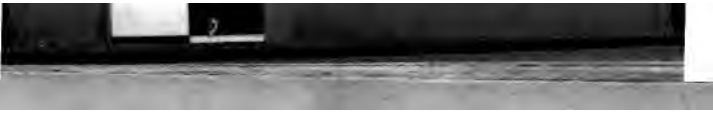
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From the E.R. Kay
kindest regards



THE
PRINCIPLES OF BEAUTY

BY

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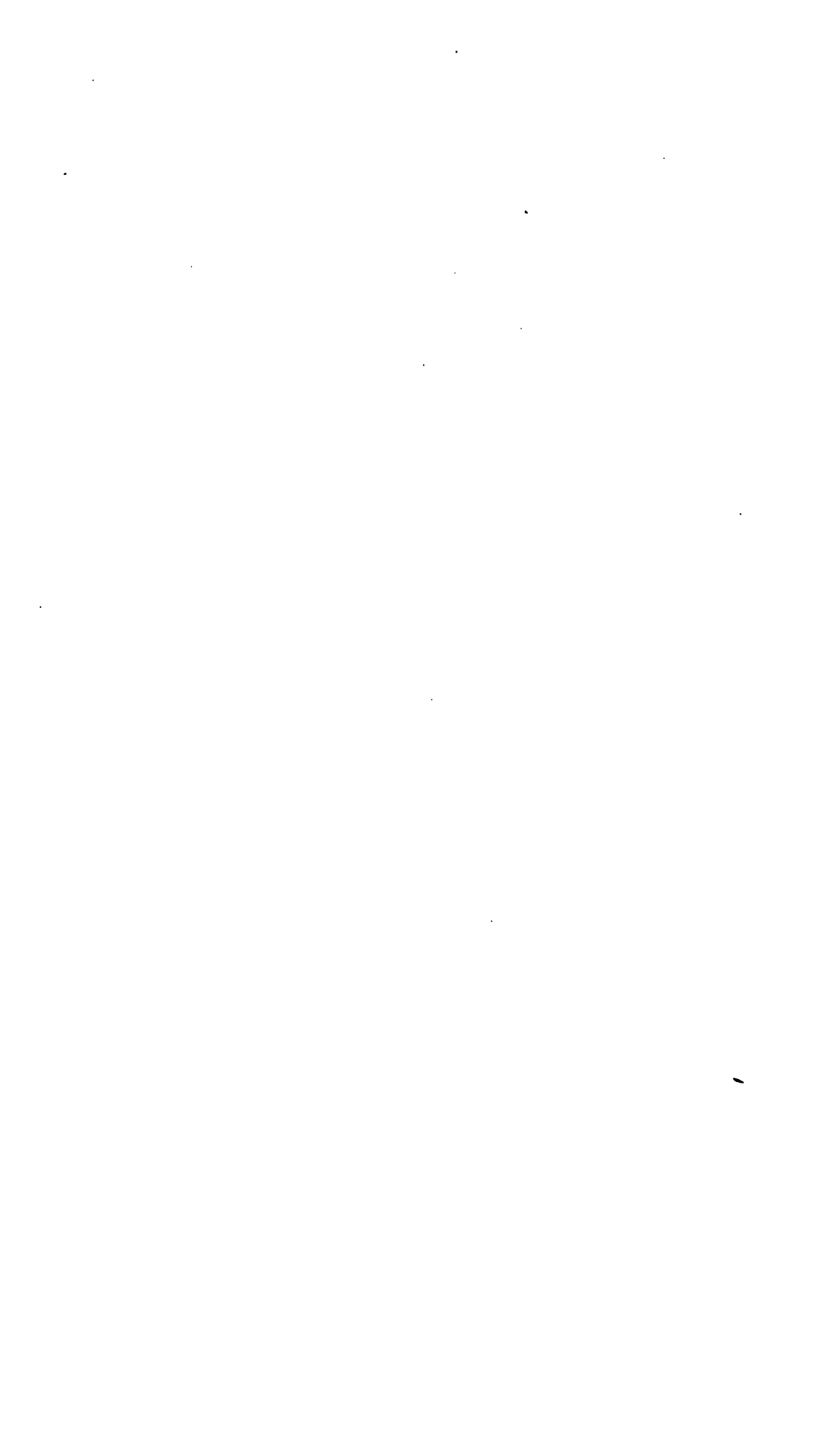
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TO
JAMES DAVID FORBES, D.C.L., F.R.S., Sec.R.S.Ed.
PROFESSOR OF NATURAL PHILOSOPHY IN THE
UNIVERSITY OF EDINBURGH,
CORRESPONDING MEMBER OF THE INSTITUTE OF FRANCE,
ETC. ETC.

These Pages are inscribed,
IN TOKEN, NOT ONLY OF MY ADMIRATION OF
HIS GENIUS AND HIS FIDELITY,
AS AN OBSERVER AND AN INTERPRETER OF NATURE,
BUT ALSO OF MY ESTEEM AND AFFECTION
FOR HIS CHARACTER,
AND OF MY GRATITUDE FOR
HIS FRIENDSHIP.

J. A. S.



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PREFACE.



THE following brief Treatise originated in a Lecture which the author delivered at the annual meeting of the Canynge Society,—a society formed for the purpose of promoting the restoration of the beautiful Church of St. Mary, Redcliffe, Bristol.

The reception of the Lecture by its hearers, and especially by some among them on whose judgment the author has great reliance, was such as to encourage him to expand it into its present form. Whether he has been successful or not in his endeavour to analyse Beauty into its principal elements, he trusts that the essay may have the effect of inducing the reader to study the works of Mr. Hay, who has done more than any previous writer towards finding a precise scientific basis for that which has been his particular department of investigation—the Beauty of Form. The results of his labours and discoveries are embodied in various

essays, which, although they have been highly appreciated and commended by some of the more philosophical of the æsthetic inquirers of the day, have scarcely received so large a circulation as they deserve. I should feel gratified if the slight abstract of his theory, which will be found in my first chapter, should add even a few students to those who are already acquainted with his writings. I should consider it an honour to be instrumental in giving any degree of extension to his fame, and a pleasure to make others the partakers of such intellectual enjoyment as I have myself derived from his researches.


It would be ungrateful on my part were I to omit this opportunity of offering my thanks to Mr. Hay, not only for the great courtesy and attention which I have received from him in correspondence (for I have not had the advantage of being personally acquainted with him), but also for the liberality with which he has placed at my disposal the copperplates which illustrate that part of this Treatise which is devoted to the exposition of his views.

Those who admit the truth of his theory—that beautiful visible proportions bear a numerical expression analogous to that of the ratios which govern music—

will, I trust, find some satisfaction in my attempt to explain upon physiological principles the pleasure derived from the Beauty of Form.

The intelligent reader will hardly need to be informed that my last chapter, entitled "The Uses of Beauty," took its character and tone from the occasion which gave rise to the Lecture.

INTRODUCTION.

HE word Beauty has two meanings, being used in a manner analogous to that in which the word Heat is employed. For as the latter is applied both to the feeling of heat, and also to the property in outward bodies which causes the feeling, so Beauty expresses both the feeling in the mind and its external cause. But the analogy will not bear to be extended further. Heat, for instance, so far as its operation on matter is concerned, may be considered quite apart from any impression on a perceiving mind, and can be conceived to exist independently of mind: but the conception of Beauty always involves a mental impression or action. Exclude feeling and thought, and no place will be found for Beauty.

It will be at once a convenient and a natural arrangement of the subject to consider Beauty in

relation, first, to Sensation ; secondly, to Thought or Reflection ; thirdly, to Moral Sentiments ; and fourthly, to Associated Emotions. After these topics, we shall conclude with a few remarks on the Uses of Beauty.



PRINCIPLES OF BEAUTY.

CHAPTER I.

SENSATIONAL BEAUTY.

THOUGH we speak of Beauty as having sensation for one of its causes, it must be borne in mind that it is only such sensation as comes through the eye and the ear. The senses of sight and hearing have been called the art-senses, and are distinguished from the others by their greater objectivity. Of their results our own personality forms a smaller part. Taste and smell and touch we cannot describe but in terms which involve our own bodily consciousness as a part of the sensation. *We feel* the taste, the smell, the touch; but the hill, the tree, the bird, the thunder, the wind, and the song, are spoken of as separate from our own personality, and without reference to our organs or nerves of seeing and hearing. We may in subsequent observations and reflections ascertain or infer that these objects were made known to us by the instrumentality of our eyes and ears; but neither these organs, nor any part of our corporeal personality, were brought before our minds in the first perceptions of such sights and sounds.

Our English word *feeling* seems to belong especially to those states of consciousness of which the Ego or personal

consciousness is the principal part; for examples, the emotions, the moral sentiments, the internal bodily sensations (hunger, thirst, &c.), and the outward sensations caused by the contact of external bodies with the skin and by the action of the muscles, in tact and touch. And though we do not use exactly such a phrase as *feeling a flavour, or an odour*, yet we must admit that there is more affinity between these two sensations and bodily feelings, than between the latter and the sensations of sight and hearing. Into the sentiment of Beauty through sense objectivity necessarily enters. The pleasure ensuing on sight and sound has a characteristic difference, which we express by the word beautiful; but pleasant odours and flavours are described as delicious—a word which involves a degree of subjectivity or personal delight approaching to the sensual. Of all the sources of pleasure, perhaps the most frequent is that of sight. Sight more frequently, extensively, and importantly than any other sense, puts us in relation with the outer world; and the quality by which we designate the pleasure which accompanies this sense is applied by metaphor to almost everything which gives us either agreeable feeling, or mental enjoyment.

There is no better definition of what is beautiful, in its simplest essence, than the phrase which we meet with early in the Bible—"pleasant to the eye." Visual pleasure is the germinal form of Beauty. "Truly the light is sweet, and it is a pleasant thing for the eyes to behold the sun." But the word receives far more extensive and more complex applications. By the transitions of language it often expresses that of which visual pleasure is no component, or a very small one. An infant's delight in a brilliant object, or some vivid colour, illustrates the simplest form of beauty. The mother, looking fondly at the infant's smiling face, and hearing its crow of

joy, has a more composite feeling of the Beautiful. A philosopher, watching the two, exclaims, "What beautiful illustrations of my theory!" using the epithet partly in its metaphorical sense, but also in expression of a kind of beauty,—namely, that of fitness, which may be considered hereafter.

Why certain feelings give us pleasure, it is often difficult to explain. But there are some general facts, which belong, more or less, to all pleasurable feelings. Thus pleasure will result from the mere *novelty* of the sensation—and with an obvious final cause independent of the enjoyment, since it calls our attention to the outer world, and makes the business of learning outward things an agreeable excitement instead of a toil; but if there is nothing in the impression but its novelty to afford us pleasure, the enjoyment soon ceases. Nature, however, is so rich, and art so fertile, that this source of pleasure never fails, and it meets us under the form of what we call *variety*. It is this which gives liveliness, piquancy, and animation to our every-day life. How much we prize it, is evident from many of the terms of commendation which we apply to things which are fresh and new and unworn—"To-morrow to fresh woods and pastures new!" But it will not alone suffice to impart pleasure. It will not make an agreeable sensation out of one that is in its nature disagreeable. But if the sensation be of a neutral character, the novelty will bestow on it a kind of charm, which betrays the feelings into a sense of the beautiful; and often erroneously, as we see in new fashions of dress. Impressions, pleasant in themselves, pall by too frequent repetition, or too long a continuance, and at last fail to awake the consciousness, unless united with some collateral interest.

But *change* must not be abrupt or sudden; or, if it be so, the impression must dwell long enough for the first effect

of suddenness to subside. Quick exchanges of light and shade, of sound and silence, by no means afford that sort of pleasure which would be called beautiful. They are rather alternations of surprise and disappointment. A vivid impression ought to cease gradually, or to pass by degrees into that which is to succeed. This is the agreeableness of continuity.

Similarity. Besides variety and continuity, there is another circumstance under which sensation gives pleasure, viz. *similarity*. Repetition is agreeable, not only if the thing is pleasant in itself, and before the repetition palls, but also through the recognition of the feeling, as being like what had been felt before. That enjoyment should accrue from the perception of similarities is scarcely less important than the gratification of variety, because we thus learn to classify the objects of our knowledge. But mere likeness without difference becomes distasteful sameness or dull uniformity,—just as mere variety without likeness would be intolerable; for in this case there would be a number of insulated experiences without any connection;—and the perception of relations is one of the deepest wants of our nature.

The pleasure derived from similarity enters largely into the beauty of symmetry. This side is like that. This curve corresponds to that. And it is like with a difference; the difference being in place or material (*idem in alio*). It is similarity which constitutes the pleasure derived from imitation, and not merely the pleasure of witnessing the successful production of likeness; for, even if the imitation is accidental, the spectator is pleased, as in the fortuitous resemblances occasionally seen in nature—as of stones which have some resemblances to plants, or of plants which in a manner resemble animals. This kind of pleasure is derived

from those lowest works of art which are mere copies of natural or artificial objects. Similarity enlivened by difference, variety restrained by unity, may be found in all the arrangements of light and shade, form, and colour, and sound, which are most pleasing to the eye and to the ear; and the same principles may be traced in those movements of the body which are attended with pleasure.

Most of our sensations are received in conjunction with muscular action. This exercise must be easy, or the enjoyment will be spoilt. In muscular exercise there is constant alternation of action and repose. To be pleasant, the movements should occasion no feeling of effort or fatigue. The pleasure which ensues on the action is not referred to the moving parts,—but there is an agreeable condition of the personal consciousness. To render it pleasant there must be sufficient rest to prevent fatigue; and this is effected by change in the direction of the movements, so that different muscles may be employed, or the same muscles in different degrees. The pleasure is enhanced when the alternations of action and repose occur at regular intervals. Thus it is easier to march or dance to music. We have said that the *sudden* change of a sensation is disagreeable. The same may be said of a muscular movement. A sudden resistance, and a sudden removal of a resistance, are almost equally displeasing. *Continuity*, then, is an element in agreeable movements, as well as in pleasant sensations.

The influence of similarity, and variety, and continuity may be traced in the beauty which belongs to simple lines—and quite apart from all collateral suggestions. A straight line can hardly be said to be in itself either beautiful or the reverse. It has unity of direction, which, if too prolonged, may be displeasing by excess of uniformity, and by muscular

fatigue. Two parallel lines are agreeable or satisfactory by reason of their similarity of direction, and their equality of distance throughout their length. Two lines converging partly enclose a space which may give pleasure to the eye, when seen in relation to some other angle, by virtue of the proportion. The angles are seen comparatively in a triangle. In the equilateral triangle the angles give the satisfaction of similarity, unity, and equality of ratio to the whole,—being $60^\circ : 60^\circ : 60^\circ = 180$, or $1 : 3$.

In the right-angled isosceles, they present unity and variety, and yet definite proportions,—being $1 : 1$ and 1 to 2 , i. e. $45^\circ : 45^\circ$ and $45^\circ : 90^\circ$.

In the scalene triangle made by bisection of the equilateral we have variety governed by proportion,—the angles being $30^\circ : 60^\circ : 90^\circ$ or $1 : 2$ and $2 : 3$.

In another scalene, we have $18^\circ : 72^\circ : 90^\circ$, or $1 : 4$ and $4 : 5$.

We have said that into agreeable sensation variety, continuity, and similarity enter more or less. Now a curved line presents both continuity and variety, in a manner agreeable to the sensation of sight, and calling forth an agreeable exercise of the muscles of the eye. But some curves are more pleasant than others. The circle is less agreeable than the ellipse, and the simple ellipse than the ovoid or composite ellipse. In the circle there is constant change of direction; but every change is like its predecessor, and the general appearance is excess of uniformity or monotony. Moreover, the muscular actions which trace it, whether of the eye or of the hand, are comparatively difficult. In the ellipse the change of direction is more gradual, and the figure admits of division by the eye, without diameters, into opposites which are similar and symmetrical. The ovoid is still more beauti-

ful from the yet greater variety of direction, with perfect facility of gradation.

But it is in combinations of lines that the principles which have just been adverted to become still more obvious. If we trace a succession of straight lines of equal lengths, forming a succession of equal angles (as in the pattern for ladies' work called Vandyke), the effect is not unpleasing; for there is a variety of direction, recurring at equal intervals, that produces similarity, and thus compensates in some degree for the want of continuity and gradation: but if the successive lines are of unequal lengths, and at unequal angles, making what is called a jagged line, we have a very disagreeable effect—the result of sudden transitions of direction, without any regularity of intervals. It is the excess of variety. But, in estimating the æsthetical effect of combinations of lines, we are apt to forget (and I am not aware that this subject has been hitherto noticed) the influence on the eye of the partially enclosed spaces. In following such linear forms, the eye not only pursues the lines, but it also traverses the intervening spaces. I have adduced the monotony of the circle, and the more pleasing variety of the ellipse, as explained by the direction of the curve. But, apart from the course of the line, there is an impression left on the sense by the enclosed space. The circle is always the same in form, however different in size, the radii being equal. The ellipse, on the other hand, is in its nature variable, and is at once recognized as such. It suggests a form which may vary almost indefinitely by the varying proportions between its major and minor axis.

Combined
lines.

When lines are so combined as to produce only partial enclosures of space, the influence of the latter will depend on the arrangement of the lines. Thus if we take a series of semicircles of equal diameters, and arrange them on a hori-

zontal line with the convexities uppermost, the effect is agreeable. For, though there is a repetition of the same linear form, the spaces between the semicircles are bounded by curvilinear angles, which produce a pleasing contrast. But if the semicircles are so arranged that the curves flow into each other, and so take opposite directions—that is, with alternating convexities and concavities—the eye is chiefly occupied with the line, the effect of which is thus equally balanced between the variety of direction and the similarity and equality of the curves. Though the effect, however, is agreeable, the pleasure does not equal that which is produced by the undulating or waving line, which is made up of a succession of segments of ellipses.

Beauty of Form.

So much, then, for lines.—But there are forms of a composite character which excite the feeling of Beauty by reason of a profounder symmetry than is at first sight discoverable,—a symmetry the nature of which may afford to the æsthetical student a subject of very interesting speculation.

This higher kind of Beauty of Form may be perceived and delighted in without any knowledge of its source ; but there must be a certain organization of the sensorium for this effect. As it is a well-known fact that some persons are insusceptible to the enjoyment of the more complex forms of harmony of sound, so there are subtleties of symmetry beyond the range of ordinary perception. There are individuals who have not the æsthetical constitution which would enable them to recognize and enjoy the exquisite proportions of the Venus of Melos, or of the portico of the Parthenon, just as others are dead to the harmonies of Beethoven.

I think I may appeal with confidence to the experience of

all who have felt great delight in architecture and sculpture as to the fact of there being an intuitive perception of harmony, or a feeling of satisfaction and admiration, arising in the mind, on the contemplation of a building in its totality, very different from the enjoyment of the beauty of separate parts. A great deal of the pleasure, and indeed the most common gratification, is that which is derived from parts. We see a cathedral, and talk of the beauty of such a window, or such an arch, or transept, or cluster of pillars. Our admiration of the building, as a whole, is very different. Long before I had the least idea of the cause of my enjoyment, I remember the peculiar delight with which I looked at Salisbury Cathedral as a whole. It was not to my consciousness resolvable into an aggregate or succession of pleasant impressions from spire, tower, arches, buttresses, and windows; but it was an indefinable sense of harmony of proportion. Common as such feelings must have been, it is remarkable that till of late they have not been satisfactorily accounted for. One source of the pleasure has been discovered and elucidated by the genius and the patient investigations of Mr. Hay. The following observation had been thrown out by Sir I. Newton in a letter to Mr. Harrington:—"I am inclined to believe some general laws of the Creator prevailed with respect to the agreeable or unpleasing affections of all our senses; at least the supposition does not derogate from the wisdom or power of God, and seems highly consonant to the simplicity of the microcosm in general." This was in answer to a suggestion of Mr. Harrington's, that the proportions in architecture are coincident with the harmonic ratios in sound. But his attempts to realize the idea were founded on lineal measurements, and they were unsuccessful. Mr. Hay, having found that the harmony of forms could not be explained by ratios, derived from lineal measurements, was led to inquire whether the clue might not

Mr. Hay's
Theory.

be found in the proportions of the component angles. The result, after many years of acute observation and unwearied study, has been, that a form is beautiful when the space which it encloses can be analyzed into angles which bear proportions to each other analogous to those which subsist between the notes of music. The basis of harmony is, that, when sounds mingle agreeably, the vibrations of which they are severally composed bear such a relation to each other as is capable of a very simple numerical expression. Thus, the octave is 2 to 1 ; the dominant 2 to 3 ; the mediant 4 to 5. All the *harmonics* are composed of whole numbers in relation to the unit—as $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, &c. These harmonics again correspond to the points or *nodes* at which a string in vibration spontaneously divides itself.

Indeed, all the numbers in which musical notes are expressed denote relations of physical agencies. Thus, the octave, or eighth note of the musical scale, is the double of the first in this respect,—viz. that in a second of time the octave has double the number of vibrations which belong to the fundamental note. The notes composing the diatonic scale lie between the fundamental note and its octave ; and the fractions belonging to them denote the relative lengths of the string, and, inversely, the proportionate number of vibrations. Thus, the octave is the sound of half the string, and the vibrations are as 2 : 1. Take *C* of the middle scale. The second note *D* is to *C* as 8 : 9, being the sound of $\frac{8}{9}$ of the string. While *C* is vibrating 8 times *D* vibrates 9. The vibrations of the third note *E* bear to those of *C* the ratio of 5 to 4 ; the length of the string being $\frac{4}{5}$. The fourth note *F* is sounded by $\frac{3}{4}$ of the string, and the vibrations relatively to *C* are as 4 to 3. *G* is the fifth note, and belongs to $\frac{2}{3}$ of the string ; and the ratio of its vibrations, in relation to the fundamental note, are

as 3 to 2. The sixth note *A* has $\frac{2}{3}$ of the length, and therefore its vibrations are as 5 to 3. The seventh note *B* has $\frac{8}{15}$, with a corresponding ratio of vibration. The eighth is the octave *C* and completes the diatonic scale. Mr. Hay has found it convenient for his analogy to adopt the old German scale, and take in *B* flat, which is $\frac{4}{7}$, and called *B natural* in the old scale, while our *B natural* was formerly designated *H*.

If we follow up the notes into the higher octaves, successively, we shall find that all the numbers are multiples of 2, 3, 5, and 7. There are no other primes than these. Here is a scale of four octaves:—

	Tonics.	Supertonics.	Mediants.	Subdominants.	Dominants.	Submediants.	Subtonics.	Semi-subtonics.	Tonics.
I. {	(1) C	($\frac{8}{9}$) D	($\frac{4}{5}$) E	($\frac{3}{4}$) F	($\frac{2}{3}$) G	($\frac{3}{5}$) A	($\frac{4}{7}$) B	($\frac{8}{15}$) H	($\frac{1}{2}$)* c
II. {	($\frac{1}{2}$)* c	($\frac{4}{9}$) d	($\frac{2}{5}$) e	($\frac{3}{8}$) f	($\frac{1}{3}$)* g	($\frac{3}{10}$) a	($\frac{2}{7}$) b	($\frac{4}{15}$) h	($\frac{1}{4}$)* c
III. {	($\frac{1}{4}$)* \bar{c}	($\frac{2}{9}$) \bar{d}	($\frac{1}{5}$)* \bar{e}	($\frac{3}{16}$) \bar{f}	($\frac{1}{6}$)* \bar{g}	($\frac{3}{20}$) \bar{a}	($\frac{1}{7}$)* \bar{b}	($\frac{2}{15}$) \bar{h}	($\frac{1}{8}$)* \bar{c}
IV. {	($\frac{1}{8}$)* $\bar{\bar{c}}$	($\frac{1}{9}$)* $\bar{\bar{d}}$	($\frac{1}{10}$)* $\bar{\bar{e}}$	($\frac{3}{32}$) $\bar{\bar{f}}$	($\frac{1}{12}$)* $\bar{\bar{g}}$	($\frac{3}{40}$) $\bar{\bar{a}}$	($\frac{1}{14}$)* $\bar{\bar{b}}$	($\frac{1}{15}$)* $\bar{\bar{h}}$	($\frac{1}{16}$)* $\bar{\bar{c}}$

It is curious to observe, in passing, how the prime numbers correspond to the relations of unity and variety. *Two* is 1+1, and therefore the type of unity and equality. *Three* is 2+1; the first uneven number, and the type of variety. *Five* is the combination of the two types—and *seven* also. We have remarked that harmonious notes vibrate relatively to each other in ratios of very simple numerical expression, and we have instanced those of the octave, dominant, and mediant, in relation to the fundamental note. In comparing the intermediate notes with these, and with each other, the same law regulates

the degree of consonance and dissonance. The higher the numbers, the less is the harmony. Thus *C* is to *D* as 8 : 9, and the sound is disagreeable ; and *D* sounded together with *E* is still more displeasing, the ratio being 9 : 10 ; but *D* with *G* is quite harmonious, being 3 : 4, and so on. The following table exhibits some of these combinations. Let any one sound these notes together on the piano or the harmonium, and his ear will at once appreciate the truth of the statement, that harmony of sound and simplicity of numerical ratio go together.

<i>C</i> : <i>c</i>	1 : 2
<i>C</i> : <i>G</i>	2 : 3
<i>C</i> : <i>F</i> , <i>E</i> : <i>A</i> , <i>D</i> : <i>G</i>	3 : 4
<i>D</i> : <i>B</i> nat.	3 : 5
<i>C</i> : <i>E</i> , <i>F</i> : <i>A</i>	4 : 5
<i>E</i> : <i>G</i>	5 : 6
<i>G</i> : <i>B</i> flat	6 : 7
<i>C</i> : <i>B</i> flat	7 : 8
<i>C</i> : <i>D</i> , <i>A</i> : <i>B</i>	8 : 9
<i>E</i> : <i>D</i>	9 : 10
<i>B</i> : <i>B</i> flat	14 : 15
<i>B</i> nat. : <i>c</i>	15 : 16

It has been the attempt of many investigators to discover harmonic ratios in the measurements of beautiful forms, both in nature and in art ; but the results proved unsatisfactory when the measurements were all linear, or comparisons of heights, and lengths, and breadths. Mr. Hay was the first to conceive the idea of measuring and testing the proportions of component angles in such forms. The working out of his idea, in a very large number of instances, has been attended with the most gratifying success. With some of these results

I shall endeavour to make my readers acquainted. Those who wish to pursue the inquiry further will, of course, study the works of Mr. Hay, a catalogue of which will be found in the Appendix.

It will be necessary, however, to premise a few words respecting the geometrical figures into which beautiful forms may be resolved. The chief of these are—the triangle, the rectangle, the circle, the ellipse, and the composite ellipse. The varieties of these may be designated by some one angle, which is therefore the governing angle. The equilateral triangle has its angles equal, each being 60° . But, if the triangle be bisected, it gives two right-angled scalene triangles equal to each other. A scalene triangle thus formed contains the angles 30° , 60° , 90° . It is called the triangle of $\frac{1}{3}$ —the smaller angle being one-third of a right angle. And any scalene right-angled triangle is designated by the proportion which the smaller angle bears to the right angle. Thus, should the smaller angle be $22^\circ 30'$, the triangle would be called the triangle of $\frac{1}{4}$; of 18° , $\frac{1}{5}$; and so on. The isosceles right-angled triangle is half of a square made by the diagonal. The two smaller angles are equal, each being 45° , and therefore bearing to 90° the ratio of 1 : 2. This triangle is then a triangle of $\frac{1}{2}$.

Rectangles are designated by the angles formed by their diagonals. The square is a rectangle of $\frac{1}{2}$; other rectangles may be rectangles of $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, &c. according to the ratios of the smaller angles of their component triangles to the right angle. (See Plate I.)

A circle may be inscribed within a square or a square within a circle. The circle is therefore a curvilinear form of $\frac{1}{2}$, being governed by the angle of 45° , which is a tonic angle. The ellipse is of very variable dimensions—measurable by the triangle formed by the semiaxes, and a line joining their

extremities. If this triangle be governed by an angle of 30° , the ellipse is an ellipse of $\frac{1}{3}$, or a dominant ellipse. Parallelograms and ellipses are correlative like the square and the circle. (See Plate II.)

These proportions have been derived, as it will be remembered, from the right angle. According to Mr. Hay's system of harmonic proportion any angle may be taken as the fundamental angle: but the other angles must bear proportions expressible in numbers corresponding to those which belong to the ratios in music; and angles, parallelograms, and curves, are spoken of as dominants, mediants, tonics, supertonics, &c. as indicating those ratios to the fundamental angle. They bear also harmonious or discordant ratios to each other, analogous to those which have been already pointed out in the several notes of the diatonic scale.

We are now prepared for the illustration of these principles by the results of an analysis of certain acknowledged forms of beauty.

The Human Face and Head.

THE symmetrical beauty of the human face and head is mainly dependent on the bony structures. The beauty of expression, or the beauty belonging to variety, results from the action of the muscles in the play of the features;—but with the former are we now chiefly occupied. The configuration of the cranium approaches more or less to that of a globe; and the configuration of the face to that of a prolate spheroid. The circle will represent the former, the ellipse the latter. A diagram may be constructed in which the circle and ellipse shall have a certain relation to each other as to their diameters, and in which lines drawn from one extremity of the major axis of the

ellipse, and making harmonic angles with it, shall intersect the curve of the ellipse at points which mark the most important divisions of the face and head, and thus lay the foundations of a beauty which corresponds to that of the finest specimens of Greek sculpture. I take the following description, and the explanatory plate, from Mr. Hay's last work, "The Science of Beauty," pp. 58—60.

"The angles which govern the form and proportions of the human head and countenance are, with the right angle, a series of seven, which, from the simplicity of their ratios to each other, are calculated to produce the most perfect concord. It consists of the right angle and its following parts—

Tonic.	Dominant.	Mediant.	Subtonic.
$(\frac{1}{2})$	$(\frac{1}{3})$	$(\frac{1}{5})$	$(\frac{1}{7})$
$(\frac{1}{4})$	$(\frac{1}{6})$		

These angles, and the figures which belong to them, are thus arranged:—

The vertical line A B (Plate III. fig. 2) represents the full length of the head and face. Taking this line as the greater axis of an ellipse of $(\frac{1}{3})$, such an ellipse is described around it. Through A the lines A G, A K, A L, A M, and A N, are drawn on each side of the line A B, making, with the vertical, respectively the angles of $(\frac{1}{3})$, $(\frac{1}{4})$, $(\frac{1}{5})$, $(\frac{1}{6})$, and $(\frac{1}{7})$. Through the points G, K, L, M, and N, where these straight lines meet the curved line of the ellipse, horizontal lines are drawn by which the following isosceles triangles are formed, A G G, A K K, A L L, A M M, and A N N. From the centre X of the equilateral triangle A G G the curvilinear figure of $(\frac{1}{2})$, viz., the circle, is described circumscribing that triangle.

"The curvilinear plane figures of $(\frac{1}{2})$ and $(\frac{1}{3})$, respectively, represent the solid bodies of which they are sections, viz., a

sphere and a prolate spheroid. These bodies, from the manner in which they are here placed, are partially amalgamated, as shewn in figures 1 and 3 of the same plate, thus representing the form of the human head and countenance, both in their external appearance and osseous structure, more correctly than they could be represented by any other geometrical figures. Thus the angles of ($\frac{1}{2}$) and ($\frac{1}{3}$) determine the typical form.

“ From each of the points u and n , where $A M$ cuts $G G$ on both sides of $A B$, a circle is described through the points p and q , where $A K$ cuts $G G$ on both sides of $A B$, and with the same radius a circle is described from the point a , where $K K$ cuts $A B$.

“ The circles u and n determine the position and size of the eyeballs, and the circle a the width of the nose, as also the horizontal width of the mouth.

“ The lines $G G$ and $K K$ also determine the length of the joinings of the ear to the head. The lines $L L$ and $M M$ determine the vertical width of the mouth and lips when at perfect repose, and the line $N N$ the superior edge of the chin. Thus simply are the features arranged and proportioned on the facial surface.”

That this theoretical calculation by Mr. Hay will bear an experimental test I proved, in a very interesting manner, not long ago. I took the height of a lady's head, measured from the vertex to a horizontal line, drawn at right angles to it from the termination of the chin. This lady is remarkable for the classical beauty of form in her face and head. Upon this line I constructed a diagram, representing the proportions of the profile, as in figure 3—that is, describing a circle, a dominant ellipse, and the angles of $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, and $\frac{1}{7}$. The features were sketched in, so as to conform to a Greek model,

by my daughter, who was not at all familiar with the lady's face. When the diagram was afterwards applied to the living face and head, the correspondence of the general contour, and of the several divisions, forehead, nose, and mouth, was singularly close, and yet the only measurement taken from life was, as I have said, the height from vertex to chin.

The Human Figure.

THE importance of the human figure as a type of Beauty has been recognized in all times. Vitruvius says: "No building can possess the attributes of composition in which symmetry and proportion are disregarded; nor unless there exists that perfect conformation of parts which may be observed in a well-formed human being." In a letter addressed by Michael Angelo to Cosmo I. there is the following passage: "The nose, planted in the middle of the face, does not depend on one or the other eye; but the one hand must necessarily resemble the other, and the one eye should answer to the other, and also relatively to the corresponding parts of the face in which they are placed; so the members of architecture may be said to depend in a certain sense on those of the human body. He who is not a good master of the human figure, and especially of anatomy, cannot comprehend the principle I insist upon."*

To ascertain the due proportions of the human figure various measurements have been proposed; and although they have all yielded some practical success, as guides to drawing and composition, yet they do not impress the mind as having been founded upon any law involving unity of design, or

* Harford's Life of Michael Angelo, vol. ii. p. 185.

harmonizing with any other facts in the order of nature. Many of the modes of measurement have been very empirical; almost absurdly so. Thus the whole height of the body is the length of the foot so many times repeated, or so many heads; and the proportions of the head are so many noses: and so on.

Carus takes a third of the moveable part of the vertebral column as the unit of measurement; but, as his able reviewer in the *Quarterly Review* (1856) remarks, "the choice is certainly arbitrary, and the grounds by which he justifies it are fanciful;" though the reviewer adds, "it supplies us with a convenient unit of measurement, and one to which the dimensions of many important parts are closely and very simply adjusted." But, according to Mr. Hay's theory, the same principle of measurement which develops beautiful proportions in the human head is not only applicable to the whole figure also, but it likewise yields equally satisfactory results when applied to beautiful forms in architecture and in fictile art.

"The manner of applying this system in imparting proportions to a representation of the human figure, and thereby synthetically developing in it the operation of the law in question, is to adopt, as a fundamental angle, either $\frac{1}{2}$, $\frac{8}{15}$, $\frac{5}{9}$, $\frac{9}{16}$, $\frac{4}{7}$, $\frac{7}{12}$, or $\frac{3}{5}$ of the semicircle, according to whether feminine beauty or masculine power may be the required characteristic of the figure to be represented. For, as in architecture, some structures being designed for temples of worship, and others for castles of defence, their fitness for these purposes will materially affect their respective æsthetic proportions; so likewise in the human figure, the chief characteristic in the typical female form being pure and simple beauty, while that of the typical male form is beauty modified by massive strength; the basis on which each of the figures is constructed might be

presumed to have reference to the sensations it would awaken—the one of loveliness, the other of strength. Yet the relative proportions of the parts in each case ought to develop the same æsthetic laws, although in different modes. Such are the qualities of fitness which characterize the beauty of the Venus, as compared with that of the Hercules of the ancients, and render these statues perfect types of the sexes.

“ In the above series of angles, the smallest ($\frac{1}{2}$ the semicircle) gives the proportions of the Venus, and the largest ($\frac{3}{5}$ the semicircle) those of the Hercules ; so that the intermediate angles may be adapted to all intermediate classes of proportions, such as were imparted by the ancient Greeks to the statues of their other deities and their heroes.

“ The angle, adopted as a fundamental or tonic angle (which we shall in the present case suppose to be the first or $\frac{1}{2}$ the semicircle), is divided agreeably to the spontaneous division of the monochord into the following :—

Tonic angles.	Dominant angles.	Mediant angles.	Sub-tonic angles.	Super-tonic angle.
$(\frac{1}{2})$	$(\frac{1}{3})$			
$(\frac{1}{4})$	$(\frac{1}{6})$	$(\frac{1}{5})$	$(\frac{1}{7})$	
$(\frac{1}{8})$	$(\frac{1}{12})$	$(\frac{1}{10})$	$(\frac{1}{14})$	$(\frac{1}{9})$

“ From the extremities of a vertical line of a given length, representing the full height of the intended figure (whether its dimensions are to be those of a small gem, a colossal statue, or anything intermediate in size), a series of oblique lines are drawn, making with it the above angles ; then another vertical line is drawn, the situation of which is determined by the intersection of one of the tonic lines, drawn from one extremity, with one of the dominant lines drawn from the other ; and to complete the rectilinear portion of the diagram, a series of horizontal lines are added, whose situations are also deter-

mined by the intersections of the oblique lines. With this rectilinear portion, a series of curvilinear figures are associated, and these belong to the tonic, the dominant, and the mediant angles, and their sizes and situations are determined by the vertical, horizontal, and oblique lines already drawn. Thus simply may diagrams of the human figure be produced of any required dimensions or characteristic proportions.”*

The diagrams of Plate IV. illustrate the following facts; firstly, That on a given line, the figure is developed as to its principal points entirely by lines drawn either from the extremities of this line or from some obvious and determined localities; and secondly, That the angles which these lines make with the given line are all simple multiples or sub-multiples of some given fundamental angle, or bear to it a proportion, admissible under the most simple relations, such as those which constitute the scale of music. The diagrams Plate V. illustrate the curves of the outline of the human figure, viewed in front and in profile. This contour may be resolved into a series of ellipses governed by the same simple angles; and these ellipses, like the lines, are inclined to the first given line by angles which are simple multiples or sub-multiples of the given fundamental angle. The mode of constructing these diagrams will be given in the Appendix.

“Manner in which these curves are disposed in the lateral outline of the human figure as viewed from the front (figure 1, plate V.):—

					Points.		Curves.
Head	.	.	.	from	1	to 2	($\frac{1}{2}$)
Face	.	.	.	„	2	„ 3	($\frac{1}{3}$)
Neck	.	.	.	„	3	„ 4	($\frac{1}{5}$)
Shoulder	.	.	.	„	4	„ 6	($\frac{1}{8}$)

* Hay's Natural Principles of Beauty, pp. 9—11.

	Points.	Curves.
Shoulder ,	6 „ 8	($\frac{1}{4}$)
Trunk ,	9 „ 15	($\frac{1}{4}$)
„ ,	21 „ 24	($\frac{1}{2}$)
Outer surface of thigh and leg „	15 „ 20	($\frac{1}{6}$)
Inner surface of thigh and leg „	25 „ 30	($\frac{1}{6}$)
Outer surface of the arm „	8 „ 33	($\frac{1}{6}$)
Inner surface of the arm „	9 „ 36	($\frac{1}{6}$)

“ Manner in which they are disposed in the outline of the human figure as viewed in profile (figure 2, plate V.) :—

	Points.	Curves.
Front of neck . . from	1 to 2	($\frac{1}{6}$)
„ „ trunk . . „	2 „ 10	($\frac{1}{4}$)
Back of neck . . „	16 „ 18	($\frac{1}{6}$)
„ „ trunk . . „	18 „ 23	($\frac{1}{4}$)
„ „ „ . . „	23 „ 25	($\frac{1}{3}$)
Front of thigh and leg . „	11 „ 13	($\frac{1}{4}$)
„ „ „ . „	13 „ 15	($\frac{1}{6}$)
Back of thigh and leg . „	25 „ 32	($\frac{1}{6}$)
Front of the arm . . „	33 „ 37	($\frac{1}{6}$)
Back of the arm . . „	38 „ 40	($\frac{1}{6}$)
Foot „	0 „ 0	($\frac{1}{6}$)

“ In order to exemplify more clearly the manner in which these various curves appear in the outline of the figure, I give in plate VI. the whole curvilinear figures, complete, to which these portions belong that form the outline of the sides of the head, neck, and trunk, and of the outer surface of the thighs and legs.

“ The axes of these ellipses form angles with the vertical line, which bear the following harmonic ratios to the right angle :—

	Parts of Outline.		Angle to which the curve belongs.		Angle of inclination of major axis of curve.
From	1 „ 2	. . .	$(\frac{1}{2})$	. . .	(0)
„	2 „ 3	. . .	$(\frac{1}{3})$	. . .	(0)
„	3 „ 4	. . .	$(\frac{1}{5})$	. . .	(0)
„	4 „ 5	. . .	$(\frac{1}{6})$	. . .	$(\frac{1}{5})$
„	5 „ 6	. . .	$(\frac{1}{6})$	. . .	$(\frac{8}{9})$
„	6 „ 8	. . .	$(\frac{1}{4})$	. . .	$(\frac{1}{7})$
„	9 „ 10	. . .	$(\frac{1}{4})$	. . .	$(\frac{2}{9})$
„	10 „ 11	. . .	$(\frac{1}{4})$	. . .	$(\frac{1}{6})$
„	11 „ 13	. . .	$(\frac{1}{4})$	. . .	$(\frac{1}{2})$
„	13 „ 15	. . .	$(\frac{1}{4})$	. . .	$(\frac{1}{5})$
„	15 „ 16	. . .	$(\frac{1}{6})$	. . .	$(\frac{1}{6})$
„	16 „ 18	. . .	$(\frac{1}{6})$	. . .	$(\frac{2}{9})$
„	18 „ 19	. . .	$(\frac{1}{6})$	. . .	$(\frac{1}{6})$
„	19 „ 20	. . .	$(\frac{1}{6})$	. . .	$(\frac{1}{3})$

“ Thus there is a perfect harmony of combination in the proportions of the human figure, associated with as perfect a harmony of succession in its beautifully undulated outline, the curves of which rise and fall in ever-varying degree, and melt harmoniously into one another like the notes of a pleasing melody.”*

Mr. Hay, in conjunction with two gentlemen of eminent authority in science, Professor Kelland, Professor of Mathematics in the University of Edinburgh, and Professor Goodsir, Professor of Anatomy in the same University, applied this system of measurement to the living model, and to those exquisite remains of Greek sculpture—the Venus de’ Medici and the Venus of Melos; and the result was quite satisfactory, as showing the agreement of the proportions of the several figures with those which are defined in the harmonic theory.

* Op. cit. pp. 20—22.

Architecture.

THE proportions in works of architecture may be examined on the same principles as those which have been applied to the human face and figure. Let us follow Mr. Hay, first, in his examination of the front portico of the Parthenon of Athens. "Of all the monuments," says Mr. Kinnaird, "of ancient and modern magnificence which have been within our view, the grandeur of this (the Parthenon) alone surpassed anticipation, leaving an impression on the mind similar to, but more profound, than the charms of an harmonious fugue or of a rapturous effusion of poetry."

"The angles which govern the proportions of this beautiful elevation are the following harmonic parts of the right-angle:—

Tonic Angles.	Dominant Angles.	Mediant Angles.	Subtonic Angle.	Supertonic Angles.
$(\frac{1}{2})$	$(\frac{1}{3})$	$(\frac{1}{5})$	$(\frac{1}{7})$	$(\frac{1}{9})$
$(\frac{1}{4})$	$(\frac{1}{6})$	$(\frac{1}{10})$		$(\frac{1}{18})$
$(\frac{1}{8})$				
$(\frac{1}{16})$				

"In Plate VII. I give a diagram of its rectilinear orthography, which is simply constructed by lines drawn either horizontally, vertically, or obliquely, which latter make with either of the former lines one or other of the harmonic angles in the above series. For example, the horizontal line A B represents the length of the base or surface of the upper step of the substructure of the building. The line A E, which makes an angle of $(\frac{1}{3})$ with the horizontal, determines the height of the colonnade. The line A D, which makes an angle of $(\frac{1}{4})$ with the horizontal, determines the height of the

portico, exclusive of the pediment. The line $A C$, which makes an angle of $(\frac{1}{3})$ with the horizontal, determines the height of the portico, including the pediment. The line $G D$, which makes an angle of $(\frac{1}{7})$ with the horizontal, determines the form of the pediment. The lines $E Z$ and $L Y$, which respectively make angles of $(\frac{1}{16})$ and $(\frac{1}{18})$ with the horizontal, determine the breadth of the architrave, frieze, and cornice. The line $v n u$, which makes an angle of $(\frac{1}{3})$ with the vertical, determines the breadth of the triglyphs. The line $t d$, which makes an angle of $(\frac{1}{2})$, determines the breadth of the metops. The lines $c b r f$, and $a i$, which make each an angle of $(\frac{1}{6})$ with the vertical, determine the width of the five centre intercolumniations. The line $z k$, which makes an angle of $(\frac{1}{8})$ with the vertical, determines the width of the two remaining intercolumniations. The lines $c s$, $q x$, and $y h$, each of which makes an angle of $(\frac{1}{10})$ with the vertical, determine the diameters of the three columns on each side of the centre. The line $w l$, which makes an angle of $(\frac{1}{9})$ with the vertical, determines the diameter of the two remaining or corner columns.

“ In all this, the length and breadth of the parts are determined by horizontal and vertical lines, which are necessarily at right angles with each other, and the positions of which are determined by one or other of the lines making the harmonic angles above enumerated.

“ Now, the lengths and breadths thus so simply determined by these few angles have been proved to be correct by their agreement with the most careful measurements which could possibly be made of this exquisite specimen of formative art. These measurements were obtained by the ‘ Society of Dilettanti,’ London, who, expressly for that purpose, sent Mr. F. C. Penrose, a highly educated architect, to Athens, where he

remained for about five months, engaged in the execution of this interesting commission, the results of which are now published in a magnificent volume by the Society.* The agreement was so striking, that Mr. Penrose has been publicly thanked by an eminent man of science for bearing testimony to the truth of my theory, who in doing so observes, ‘The dimensions which he (Mr. Penrose) gives are to me the surest verification of the theory I could have desired. The minute discrepancies form that very element of practical incertitude, both as to execution and direct measurement, which always prevails in materialising a mathematical calculation made under such conditions.’”

After a similar illustration of the proportions of the portico of the Temple of Theseus, Mr. Hay goes on to remark:—

“The foregoing examples being both horizontal rectangular compositions, the proportions of their principal parts have necessarily been determined by lines drawn from the extremities of the base, making angles with the horizontal line, and forming thereby the diagonals of the various rectangles into which, in their leading features, they are necessarily resolved. But the example I am now about to give is of another character, being a vertical pyramidal composition, and consequently the proportions of its principal parts are determined by the angles which the oblique lines make with the vertical line representing the height of the elevation, and forming a series of isosceles triangles; for the isosceles triangle is the type of all pyramidal composition.

“This third example is the east end of Lincoln Cathedral, a Gothic structure, which is acknowledged to be one of the finest specimens of that style of architecture existing in this country.

* “Longman and Co., London.”

“ The angles which govern the proportions of this elevation are the following harmonic parts of the right angle :—

Tonic.	Dominant.	Mediant.	Subtonic.	Supertonic.
$(\frac{1}{2})$	$(\frac{1}{3})$	$(\frac{1}{5})$	$(\frac{1}{7})$	$(\frac{2}{9})$
$(\frac{1}{4})$	$(\frac{1}{6})$	$(\frac{1}{10})$		$(\frac{1}{9})$
	$(\frac{1}{12})$			

“ In Plate VIII. I give a diagram of the vertical, horizontal, and oblique lines, which compose the orthography of this beautiful elevation.

“ The line A B represents the full height of this structure. The line A C, which makes an angle of $(\frac{2}{9})$ with the vertical, determines the width of the design, the tops of the aisle windows, and the bases of the pediments on the inner buttresses; A G, $(\frac{1}{5})$ with the vertical, that of the outer buttress; A F, $(\frac{1}{9})$ with the vertical, that of the space between the outer and inner buttresses and the width of the great centre window; and A E, $(\frac{1}{12})$ with vertical, that of both the inner buttresses and the space between these. A H, which makes $(\frac{1}{4})$ with the vertical, determines the form of the pediment of the centre, and the full height of the base and surbase. A I, which makes $(\frac{1}{3})$ with the vertical, determines the form of the pediment of the smaller gables, the base of the pediment on the outer buttress, the base of the ornamental recess between the outer and inner buttresses, the spring of the arch of the centre window, the tops of the pediments on the inner buttresses, and the spring of the arch of the upper window. A K, which makes $(\frac{1}{2})$, determines the height of the outer buttress; and A Z, which makes $(\frac{1}{6})$ with the horizontal, determines that of the inner buttresses. For the reasons already given, I need not here go into further detail.* It is, however,

* “ For further details, see ‘ Harmonic Law of Nature,’ &c.”

worthy of remark in this place, that, notwithstanding the great difference which exists between the style of composition in this Gothic design, and in that of the east end of the Parthenon, the harmonic elements upon which the orthographic beauty of the one depends are almost identical with those of the other.”*

The mouldings of the Parthenon have contours composed of curves derived from the composite ellipse—a figure so named “because it is composed simply of arcs of various ellipses harmonically flowing into each other. The composite ellipse, when drawn systematically upon the isosceles triangle, resembles closely parabolic and hyperbolic curves—only differing from these inasmuch as it possesses the essential quality of circumscribing harmonically one of the elementary rectilinear figures employed in architecture, while those of the parabola and hyperbola, as I have just observed, are merely curves of motion, and, consequently, never can harmonically circumscribe or be resolved into any regular figure.”

For the description of this figure, I must refer my readers to Mr. Hay's works.

In the analysis of the proportions of the east front of Lincoln, it will have been seen that the measurements have been made by means of lines drawn at certain angles from the extremity of a line representing the height, these lines being inclusive of the principal members of the building, architecturally considered. / But I am inclined to think that the harmonies most felt by the eye, in traversing a Gothic building, are those which result from the leading features, that is to say, from the ratios in which the angles, which govern those parts, combine with each other. There may be a *struc-*

* Hay's Science of Beauty, pp. 40—45.

tural harmony, as in the skeleton of the human form, independent of the proportions of the curves which make the contour,—but it is the contour which takes the eye. So also in Gothic architecture the forms of the most prominent parts of the building—the spire, the tower, the windows, the pediments, the buttresses,—and the proportions which their angles severally bear to each other as divisions of a right angle—are what dwell on the mind. Thus I find in Salisbury Cathedral a great prevalence of dominants and supertonic, which give a ratio of 3 : 4. The governing angle of a Gothic window I take to be that which is formed by a line drawn from the apex to the spring of the arch, and a vertical line which is drawn from the apex and bisects the window. Another line, drawn from the same point to the extremity of the line which marks the base of the window, gives an angle, which, compared with the former, determines the proportions of the whole window. The most beautiful windows are those of the Early English and the Decorated styles. Their ratios I find to be either 1 : 2 or 2 : 3.

I cannot conclude this section without bringing forward what appears to me to be a very interesting confirmation of Mr. Hay's views of proportion. When reading an admirable biography of Michael Angelo, lately published by Mr. Harford, I was struck with one of the plates which represents St. Peter's as designed by M. Angelo, and contrasted with St. Peter's as it now stands. The most superficial observer cannot fail to notice the superiority of the former, both as to grandeur of effect and as to beauty of proportion. The eye passes, by an easy and gradual transition, from the curves of the vast dome, through those of the smaller cupolas, to the rectilinear forms of the façade, which present a most harmonious combination of variety with unity. The principal

cause of the inferiority of the present design is the elongation of the nave, which thrusts the portico and façade to a great distance from the dome. This elongation "was still more fatal," says Mr. Harford, "to the exterior beauty of the church, than to that of the interior; for the cupola, on approaching the grand façade, is cut through in perspective by its upper story, and is therefore half concealed from the eye, instead of triumphing as the sublime and presiding feature of the whole edifice."*

As the inequality of these two designs was so remarkable, it occurred to me that it would offer a good opportunity of testing Mr. Hay's system of diagonal ratios. I therefore, after including the curves in parallelograms, made a series of diagonals through all the principal parts of the building in the two designs. The resultant ratios of the angles afforded a most satisfactory confirmation of Mr. Hay's harmonic system.

In Michael Angelo's design they were 2 : 3, 3 : 4, 1 : 2, and 9 : 10.

In St. Peter's *as it is*, the ratios came out thus; 7 : 11, 7 : 18, 15 : 24, and 7 : 15.

Now, after considering these several instances in which the measurements of forms of acknowledged beauty correspond so wonderfully with harmonic ratios, I do not see that, even if no further explanation were to be given, we could avoid the conclusion that the results which have been stated are not merely accidental, but that they rest on the nature of things, and that to Mr. Hay belongs the rare merit of having been the first to bring æsthetical observation within the range of definite science—at least with reference to Beauty of Form.

* Harford's *Life of Michael Angelo*, vol. ii. page 98.

*Physiological explanation of the pleasure derived from
Beauty of Form.*

For the following attempt to explain the pleasure derived from Beauty of Form upon physiological principles I alone am responsible, though I am happy to say that Mr. Hay concurs in it.

If it be allowed that certain arrangements of lines in figures which give rise to the feeling of symmetrical beauty may be resolved into certain geometrical and numerical harmonies, we have still to inquire why these latent harmonies create pleasure. The numerical relation of sounds has been known for ages; but as to forms, many generations of men have continued to draw delight and admiration from them without the slightest suspicion of any such relations or proportions. Without carrying the analysis farther, I think we are entitled to say that, if in objects which are undeniably beautiful there are found those remarkable proportions in *space* which correspond with those proportions in *time*, which are known to give pleasure to the ear, such proportions must have a correlation to those ultimate actions in the sensorium which precede the feeling of visual pleasure. Of the nature of those actions we are at present ignorant. But there is a well-ascertained source of satisfaction or enjoyment which is closely concerned with these æsthetical feelings, and to which I have more than once alluded, though slightly. Our eyes trace lines and measure spaces by means of muscular actions. Neither a general survey of an object, nor a minute examination of it, is possible,—no curves can be followed, nor spaces traversed—without muscular movements of the eyeball. Muscular action gives

birth to pleasurable or uneasy feelings—seldom, however, in the muscles themselves—according as they are accomplished with ease or difficulty. Rhythmical muscular action is more easy and agreeable than that which is irregular.

I have already spoken of the displeasing effect of an irregular jagged line; part of the discomfort of which may be owing to the sudden checks and inequalities of the muscular movements of the eye. Let any one merely follow a series of horizontal lines drawn on paper, and then try a series which traverse the page in angles which bear no proportion to each other, and he will inevitably be the subject of a feeling of fatigue and disgust.

Geometrical and arithmetical proportions govern the material universe. It is not likely that our organs of sensation should afford an exception to the general fact. And when we can describe any of our experiences in terms which admit of numerical expression, we not only attain to accuracy of representation, but we are also bringing the fact within the scope of the most universal laws. The Ego sent into the world to feel pleasure is set in tune to the various harmonies in nature, and to thrill with responsive pleasure.

Regularity of form belongs to our most simple and ordinary arrangements in daily life. Every article of manufacture exhibits it. Without it space would be occupied at the greatest disadvantage. Confusion would be inevitable. There would be no practicable circumscription of space, nor remembrance of place. The process of *fitting*, or mutual adaptation, can only be secured by regularity of form. And the same applies to the equal and regular divisions of time;—the whole mechanism of life depends upon it.

As an equal or proportionate division of space is necessary to method, so also a like division of *time* is essential to

orderly *movement*. If men were not to march in time they could not be kept together in space; that is, the groups or companies could not be maintained in the requisite configurations. Moreover action is easier, as we have already remarked, when performed in strict adaptation to regular divisions of time, as in marching to music, or in working to a song.

Our neurological conditions at first sight seem antagonistic to, or inconsistent with, mechanical arrangements. We talk of spiritual forces superseding the mechanical arrangements of matter: but the probability is that even those forces obey the same laws to which the whole world is subordinated. Thoughts, sentiments, and emotions do not seem measurable in space and time. But the æsthetical arts are those which bring the operations of the mind into contact or co-existence with rhythmical sensations or actions. What is the difference between poetry and prose? The thoughts, images, and emotions called forth may be identical. But in poetry there is a measured arrangement of the sounds of which the words are constituent. This pleasure of sense is combined with the pleasure of thought and emotion, and makes poetry æsthetical.

As *vision* is a muscular as well as sensory action, it is highly probable, as we have already remarked, that the movements of the eye are most agreeable when under regular and rhythmical direction, though we may be quite unconscious of such regularity of action. Indeed there is an instinctive tendency to rhythm manifested in all muscular actions, from the rocking of a cradle, or the see-saw of a nurse's arms, to the most exquisite harmonies in the steps of a Taglioni. Children when happy, even in their little feasts, may be observed to beat time. Adults are disposed to sing, or hum, or dance, when subject to pleasant emotion. Philosophers, arriving at a satisfactory solution of some problem, may be

seen to swing an arm or a stick in a measured movement. Under solemn emotion the gait becomes strictly measured;—but under vexation we beat the Devil's Tattoo. Speech issuing from grand emotion tends to rhythmical cadences. Counting and measuring are those slight exercises of mind to which it is sometimes compelled by circumstances. Persons confined to bed are not unfrequently fatigued by the solicitations to this exercise, made by the eyes, which catch patterns in the curtains and wall-paper. To make the steps coincide with the pattern of a carpet, or with the flags of a pavement, is parallel to the beating of time with the hand, or walking to the time of music. In the vacuity and exhaustion of mind left by violent emotion men fall into like automatic actions of mind and muscle. They stand by the coffins of their dearest friends, and, in their desolate abstractedness of mind, mechanically count the nails in the coffin-lid, or measure the quarters of the escutcheons. But I need not multiply instances.

Now it is not likely that, from the generality of this fact, as to the whole muscular system, the muscles of the eye should present an exception. On the contrary, when we observe the great mobility of the organ, and the wonderful equipoise in the antagonism of its muscles, we might expect that their action would require a certain rhythm to make them agreeable; but if the spaces over which the eyes are carried have definite proportions to each other, it follows that the movements of the eyes will bear like proportions. *Such proportioned movements, then, are rhythmical*, and may be capable of infinite variety; that is, they may be as extensive as the variety of harmonious forms; and, in all that regulated harmonious variety, they may afford exquisite feelings of pleasure. In fact the eyes may be said to beat time to a visual

music, or to dance in concert with the flowing melody of the curving outlines they follow, or to thread with tuneful steps the mazes of beautiful proportions, unconscious all the time that they are,

“ With wanton heed and giddy cunning,
Untwisting all the chains that tie
The hidden soul of harmony.”

Dancing consists of regular movements in divisions of time determined by sound, and the pleasure of the action is quite apart from the delight in the music, though concurrent with it. Looking, then, at a symmetrical form, according to the view which I now venture to propound, consists in moving the eye over spaces measurable by angles of definite proportions; and the movements thus executed are followed by a feeling of pleasure which is akin to that of dancing, being generally, however, concurrent with other causes of pleasure, as the colour or expression of the object. The sense of harmony or proportion arises in the mind without any distinct understanding of the causation. The mind is content to accept the pleasure without recognizing its source.

While it is interesting to trace the combination of harmonic proportions as one of the sources of Beauty, we must still bear in mind that it is only one. With the geometrical beauty of the Parthenon would be combined the pleasant impression of the light reflected from the marble, the alternation of shade, the carving of the decorations, and the emotions excited by the sculptured figures, independently of the proportions of these figures. In a Gothic building the influence would be still more composite. When we take into consideration the continuities of lines, the contrasts of light and sha-

dow, oftentimes the glory of coloured windows, generally the endless variety of decorative appendages, and all the associations derived from the purposes of the building, it is obvious that many different elements of beauty are operating upon us at one and the same time. If this remark holds good as to the æsthetics of architecture, it must be, *à fortiori*, applicable to the pleasure derived from the contemplation of a beautiful human figure. This is so obvious that we need not enter into any further explanation.

It will have been noticed that Sensational Beauty, as governed by similarity, continuity, and variety, has been illustrated chiefly through Form.

Incidental allusion has been made to gradations of light and shade, and to harmony of colour. It would seem to be a somewhat incomplete discussion of Beauty through sense were colour to receive no further consideration; and yet the subject, if to be treated at all, would require more knowledge of the details than I possess, and more space than my limits will allow. Certainly, I have nothing to add to what has been fully explained in many recent works on the subject. It is enough for me to say that the more the subject is inquired into, the more striking will be the illustrations of the principle, that pleasure is derived from that tempering of contrast with likeness which is found to belong to the harmonies of form and sound.

Mr. Field was the first to give numerical expression to the relative intensities of the three primary colours, and to point out an analogy between the harmonious adjustment of these primaries to their complementary colours, and the common chord of music. Mr. Hay, who, in a work* published many

* *Laws of Harmonious Colouring*, 3rd edition. 1836.

years ago, assigned the merit of discovering this analogy to Mr. Field, has carried it further, and has arranged a diatonic scale of colours in a series of octaves ; but with what degree of success I do not presume to decide.* The pleasure derived from Form has, it appears to me, and as I have endeavoured to show in this section, a different source from that to which colour can be referred.

* I feel so much indebted to Mr. Hay for the instruction which I have derived from his writings, that, although it does not bear immediately on my subject, I cannot omit the mention of one of his claims as a discoverer, which he has stated in the following passage, extracted from his " *Laws of Harmonious Colouring* :"—

" Although I could not, by analysis, prove that there were only three colours, I succeeded in proving it to my own satisfaction, synthetically, in the following manner :—After having tried every colour in succession, and finding that none of them could be separated into two, I next made a hole in the first screen in the centre of the blue of the spectrum, and another in that of the red. I had thereby a spot of each of these colours upon a second screen. I then, by means of another prism, directed the blue spot to the same part of the second screen on which the red appeared, where they united and produced a violet as pure and intense as that upon the spectrum. I did the same with the blue and yellow, and produced the prismatic green ; as also the red and yellow, and orange was the result. I tried, in the same manner, to mix a simple with what I thought a compound colour, but they did not unite ; for no sooner was the red spot thrown upon the green than it disappeared.

" I tried the experiment with two spectrums, the one behind, and, of course, a little above the other, and passed a spot of each colour successively over the spectrum which was farthest from the window, and the same result occurred. It therefore appeared to me that these three colours had an affinity to one another that did not exist in the others, and that they could not be the same in every respect, except colour and refrangibility, as had hitherto been taught.

" These opinions, the result of my experiments, I published in 1828, as being a necessary part of a treatise of this nature ; and I did so with great diffidence, well knowing that I was soaring far above my own element, in making an attempt to throw light upon such a subject. I had, however, the gratification to learn that these facts were afterwards proved in a communication read to the Royal Society of Edinburgh by Sir David Brewster, on the 21st of March, 1831, in which he showed that white light consists of the three primary colours, red, yellow, and blue ; and that the other colours shown by the prism are composed of these."—Pp. 10, 11, 5th edition.

Beauty in Variety.

HAVING analysed the pleasure derived from similarity, we now return to variety, as a source of Beauty. The delight in new impressions, the sense of change, and of action ;—this is what may be considered the most popular kind of Beauty. For the appreciation of symmetry, a certain amount of culture is needful ; but new colours and unaccustomed forms may at once attract attention and impart pleasure to the most simple and uneducated minds.

The feelings induced are closely related to the desire for knowledge, whether it be that which consists of additions to previous experience or that which is derived from the arrangement of what we know in new combinations. And under the operation of agencies which bring such novelties and varieties the mind has a consciousness of pleasant activity analogous to the enjoyment of muscular exercise. /

It is this ministration which accounts for most of the pleasure produced by natural scenery, whether in the variety of surface presented by undulations of hill and dale, or in the ever-changing effects from new distributions of rays and colours, and shadows, or in the irregularly-winding courses of brooks and rivers, or in the endless diversities of forms in flowers, and herbs, and trees, and in the animated tribes which people the scenes of beauty. And yet in all these objects it is to be noted, that, though variety is a prevailing element, yet there is a large intermixture of similarity. A tree presents constant change of direction in the branches, the boughs, and twigs, yet we cannot but observe the similarity of the leaves to each other, and the uniformity of their colour ; and irre-

gular as may be the lines of the branches and twigs, yet, on examination, we may find more regularity in the intervals of division, and in the angles of divarication, than might at first have been expected.

This, too, is ever to be borne in mind, that, however great may be the charm of variety, expression, and change of movement, there is still a deep desire in the eye and in the mind for repose. The rustling of the foliage by wind may give a temporary animation to the grove ;—it may be pleasant to see the surface of the lake crisped by a passing breeze ; and there is undoubted fascination in features which show the play of various emotion : but foliage more frequently in agitation than at rest—a lake oftener ruffled than calm—a face always changing its expression—would induce a feeling in the spectator far less agreeable than even the monotony and lifelessness of unbroken repose.

How, then, are we to account for the undeniable fact, that if a face, though defective in contour and symmetry, is expressive of certain mental states or emotions, it is universally preferred to one which is faultlessly regular, but wanting in expressiveness ? The answer is, that in a human being we require more than fine configuration of feature ; we desire certain qualities of heart and mind, betokened in what we term a pleasing, as distinguished from a beautiful face. In saying that *this* is the more beautiful, *that* the more pleasing face, we imply that we prefer the beauty of emotion or mind to that of sense ; yet still we unconsciously refer to a standard of beauty involving the idea of symmetry or harmonious colour. The face which is pleasing in expression is, we say, *beautiful in expression*. We have pleasure in both—a greater pleasure in the expressive one ; but that which we characterize as beautiful, *par excellence*, is that which is of a certain mould

and colour. The pleasure, however, which is derived from mere physical beauty of face can never compete with that which is an indication of beauty of character.

In works of art the repetition of mere typical forms of beauty is very apt to beget a tame and insipid style. Such were the academic conventionalities against which there has been so violent a reaction in the present day. As if weary of forms of beauty, because by iteration without variety they had become stale and effete, a class of artists, endowed both with genius and industry, started up a few years ago with the seeming intention of compelling us to admire faces which express life, passion, and sentiment—though devoid of all beauty of configuration. The movement, notwithstanding the fiery zeal and eloquence of its prophet, and the smiles and applause of fashion, will not be ultimately successful. A revolution which mistakes the reverse of wrong for right is sure to fail. The lovers of beauty, preferring what is dull to what is offensive, will rather doze over the inanities and insipidities of a drowsy dilettantism, than choose to be irritated into wakeful attention by ugly contours, disproportioned figures, and ill-assorted colours, drawn and arranged after the hard and ignorant manner of the early Christian painters, and imbued with the childish symbolism of the dismal Middle Ages.

But if a living face charged with pleasing expression, though possessing no claims to regular beauty, delights us more than its converse, it might be expected that, if one or the other must be chosen, we should request the artist, except when he is engaged on a portrait, to present us with the expressive rather than with the merely beautiful face. But the cases are different; for while the chief attraction of the living face is the play of varying thought and emotion, in a work of art only one expression can be rendered; and if it represents

nothing but that one expression we become weary of it. There is a statue in one of the courts of Edinburgh, of Duncan Forbes, by Roubiliac, which, seen for the first time, is almost sure to elicit some such an exclamation as "What wonderfully life-like energy and animation!" Few persons of taste, however, would wish to be often in the presence of that restless figure; they would even rather desire to have perpetuated before them the calm stolidity of the most impassive judge that was ever turned into congenial stone.

The severance of beauty of form from beauty of expression is an unnatural divorce. It is as much opposed to a true æsthetical philosophy as an attempt to produce poetry without the melody of verse.

Even where variety of lines and forms is most natural, as in the grouping of human or angelic figures in a picture, it will be found that the arrangement is most agreeable to the eye, when, without formality, there is a certain degree of symmetry, as when one side of the picture somewhat corresponds to the other, without conspicuously balancing it. A parallelism which does not strike the eye, and yet may be traced in the direction of the limbs—the figure of a pyramid, or an ellipse, or a rectangle, which may be traceable to the eye which looks for it, though it does not in the least approach to actual definition,—such arrangements, by a virtual conformity to symmetry, without any marked appearance of it, give unquestionable pleasure to our sight. In natural objects, as I have already hinted, where there is the greatest apparent diversity, it is easy to trace the law of uniformity. In foliage there is not only the general likeness of the leaves and branches, but the direction or the relative position of the leaves is in a great measure uniform, and a departure from it produces an impression of confusion or discomposure which may even

cause us to attribute unhealthiness to the plant or tree in which we observe this derangement.

Grace—that is, beauty in motion and attitude—is a striking illustration of the union of the two principles of similarity and variety. For the secret of graceful action is that the symmetry is preserved through all the varieties of position.

In our analysis of certain beautiful combinations of form, as presented by the human face and figure, and in works of architecture, we found lines, angles, and curves, associated in a manner delightful to the sense of symmetry. Independently of the pleasure derivable from the subtle harmony which pervades such proportions, there is a more superficial element of pleasure belonging to the mere contrast or variety afforded by such diversity of lines. “How exquisite and beautiful,” says Mr. Field, “is the play of the primary figures in the human countenance!—the *arched* or *curved* brows, the *circular* and *globular* eyes, the *angular* and *pyramidal* nose, the *linear* mouth, and all the graces, forms and flexures of line and contour by which they insensibly vary and combine in the formation of the most beautiful and expressive of all Heaven’s works!”*

To some minds novelty or variety is the strongest want. Athens and Rome, the loveliest and grandest scenes in Italy and Switzerland, may have been only once visited by individuals, who, instead of returning to the same places, will choose to wander through unvisited countries, in search of new impressions and new excitement. In a mind absolutely *blasé* there is a prurient desire for mere novelty. Even deformity and grotesqueness are craved for by one sense, just as strange compounds which are sour, bitter, and nauseous to the unsophisticated, can alone stimulate another sense. This, how-

* Analogical Philosophy, vol. ii. p. 135.

ever, is chiefly seen in those who have not cultivated their mental faculties, and whose taste for similarity has not been developed in those comparisons of the judgment, in which the common generalizations of science consist—nor in the intelligent contemplation of works of art.

In closing this chapter, let us sum up by remarking that symmetry is repose, variety is action. Variety is pursuit, and symmetry is fulfilment. In the one there is expectation, in the other, satisfaction. In variety the mind unfolds itself; in symmetry it returns upon itself. A parallel for variety may be found in youth and growth; for symmetry, in perfection and maturity. The radius is the type of unity,—the circumference, of variety. Beauty moves between the centripetal and centrifugal forces, but her favourite orbit is an ellipse.

CHAPTER II.

INTELLECTUAL BEAUTY, OR BEAUTY THROUGH INTELLECTUAL OPERATIONS.

THE most obvious source under this head is Memory, or the reproduction of objects and images in themselves beautiful or productive of associations which invest them with beauty, in accordance with what we shall speak of presently as Emotional Beauty.

There are many occasions in which the results of the operations of the judgment give us a feeling of satisfaction which we call beautiful. A piece of common workmanship may be submitted to us; and, on examination, we find the parts so well fitted, and the surface so well polished, that our satisfaction leads us to say that it is a beautiful piece of work. Or we inspect some new invention; and, on finding that the means produce the intended result with certainty and precision, we pronounce it a beautiful invention, thereby expressing the admiration which it excites in our minds. And this admiration may be excited whether the effect be produced by great simplicity of means, or by a complication of arrangements so well ordered that they all work harmoniously to the desired end. When speaking of similarity and novelty, I hinted that the bringing of a number of familiar phenomena under the operation of one law, or the perception of an analogy or likeness of relations between things generally considered different, afforded one kind of pleasure, and the discovery of new phenomena gave another kind. Both of these

kinds of pleasure answer to the word Beautiful. Again, we apply this term to a lucid statement, or to a well-connected train of reasoning. The mind delights in detecting unexpected similarities from the perception of a simple proportion in the angles of a triangle up to the discovery or demonstration of the most spacious generalizations of Philosophy. In these, and all the other instances of Beauty through intellect, it will be observed that *degree* is an important element. When the excellence of the work, or of the induction, or of the reasoning, is such as to create not only satisfaction but admiration, it is designated as Beautiful.

In the operations of Fancy and Imagination we might trace like examples; but in these there is the danger of confounding the pleasure derived from the images themselves, and the associated emotions, with that which arises from their collocation. And indeed if it be merely collocation, *Wit* is the word which is often employed, rather than beauty; surprise and unexpectedness being the chief elements. When the images are alike only in one or two points, and in others incongruous, they belong to Humour. But when the things associated are in themselves beautiful, then we only use the word beauty as pertaining both to the things themselves and to the fact that they are unexpectedly brought together.

To this head must be referred the beauty which belongs to Literature. The Belles Lettres are works which in their very subject-matter tend to excite that mental enjoyment, the cause of which, whencesoever derived, is designated Beauty. But the mere composition of a literary work, independently of its subject-matter, may be such as to invest it with this character. Let it be a mere scientific exposition, or a close argument, or a narrative of uninteresting events, the phenomena may be arranged with such method, the several steps of the

reasoning be so distinctly marked and linked in such happy sequence, and the events recounted in such lucid order, as to give the reader a feeling of admiration, which instinctively brings to his lip the word Beautiful. But when a story, replete with stirring or touching incidents, representing scenes of beauty in nature, and introducing characters of moral beauty, is told in words which, by their harmony of sound, their nicety of adaptation, and their power of suggesting correlative emotions and sentiments, enhance the pleasure which even the scenes, the actions, and the persons would call forth without such reflected charms of style,—when, in a word, we have such a recital as that with which Mr. Macaulay indulges his readers, no one hesitates to affix to it the epithet Beautiful. But in this case there are more elements than the simple intellectual beauty;—they are such as are found in the impassioned argument of an orator who knows how to dispose his hearers to the reception of his views by exciting those feelings of pleasure and admiration which follow displays of rhetoric. Poetry, which is “Beauty’s consummate flower” in literature, is of still more complex constitution, deriving its elements from every one of the departments under which we are attempting to consider this subject,—calling up images of beautiful sights and sounds, thoughts tastefully arranged and decorated, and ideal conceptions of goodness and loveliness far transcending the actual,—awakening every species of emotion and passion,—and thus drawing upon the stores of Intellectual, Moral, and Emotional Beauty by words which in their metrical arrangement have a Sensational Beauty of their own.

The Beauty of Science might, like that of literature, be found to involve more elements than the simply intellectual, though they are not so numerous as in the former. Were a philosopher, without any eloquence, merely to set forth the

grand phenomena and forces displayed in the mechanism of the heavens, or in the construction of the earth, he would excite sentiments of admiration derived from a contemplation of the power of the Deity and of the arrangements of His Providence, as well as of the position of man in relation to these wonderful works;—but when such themes are treated by a Herschel, a Lyell, or a Forbes, the beauty of literature is added to that of science.

It is interesting, in reference to Intellectual Beauty, to trace the same influence of the opposite principles of similarity and variety which we commented upon in the foregoing chapter. New facts and even strange, anomalous, and insulated phenomena are welcomed by the mind which delights in variety. Order, method, analogy, unity of plan, laws, are required for the satisfaction of minds in which the love of symmetry prevails. The highest works of Art or of Literature are those which fully satisfy the taste for symmetry; and which yet, either, in the complexity of forms, colours, and sounds, afford occasions to the mind for discovering new beauties in the physical arrangements, or suggest new associations, or present objects, sentiments, and emotions in new combinations; and all this with continual pleasurable surprises in the adaptation of the *material* of the Art to the purpose accomplished. Thus the opposite principles of light and shade are gently graduated, diverse colours are blended, marble is made plastic, and words are compelled into groups, which, in their literal meaning, or in their symbols and metaphors, bring an array of fresh images, reflections, sentiments, and emotions, and at the same time, by their individual euphony, their rhythm and their metre, the melody of their clauses, and the “linked sweetness” of their harmonious periods, delight the sense of hearing, and minister to the love of order in time and space.

CHAPTER III.

MORAL BEAUTY.

WE have more than once had occasion to use this term, but we could not pause to define it. It represents the impression made upon our minds by the contemplation of certain human actions or characters. The performance of duty, the practice of goodness, charity, and benevolence, the exhibition of certain active qualities of soul, such as resolution, courage, and bravery, or of such passive virtues as patience, forbearance, and resignation,—all these may be observed and may beget in the observer's mind no other feeling than that of approval. But when these performances, practices, and endurances, are of a kind or degree that calls forth the warmer feeling of admiration, expressed in praise and applause, they are entitled to the epithet beautiful. We instinctively use this word when we see that integrity and purity have been preserved in spite of temptation, that good has been done to others through self-denial, or by encountering toil, and pain, and peril; and that injury from man, and chastisement from heaven, have been received without revenge, or even bitterness—without rebellion, or even murmuring. But putting aside the splendour of such triumphs of the good over the evil principle, or the manifestation of such high and brilliant virtues, the lives and conduct of many persons present actions so graceful, a considerateness so refined, such tenderness of sympathy, and so delicate a shrinking from

the possibility of doing violence to the feelings of others, that to these also we do not hesitate to apply the character of Moral Beauty, because we cannot behold them without pleasure and admiration.

I dare not venture on more sacred ground ; but he who has had the happiness of watching the lives of those who, in passing through the world, escape contamination ; who devote their faculties, endowments, and exertions to the promotion of the happiness of others, by making them wiser and better ; and who show in all their actions, and feelings, and endurance, that the moral sentiments are developed to the greatest height commensurate with humanity—because they are interpenetrated with, and become assimilated to, the divine light and the divine pattern ;—he who has watched the course of such lives and characters will understand what is signified by “ the beauty of holiness.”

CHAPTER IV.

EMOTIONAL BEAUTY, OR BEAUTY THROUGH SUGGESTED
EMOTIONS.

FEELINGS of an interesting and pleasurable nature, called up by outward objects, or by reproduced images in the mind, have the power of shedding beauty on their sources. It has been held by some who have thought closely and written eloquently on this subject—particularly Mr. Alison and Lord Jeffrey—that there is nothing beautiful but what owes this quality to its power of exciting or reproducing emotions of an agreeable or interesting character, such emotions being naturally or by accident connected with the object termed beautiful. This view excludes all beauty as dependent on form, colour, and sound, and indeed refuses to admit that there is any such thing as essential beauty. I trust that what has been said in the former part of this essay will have been sufficient to prove that there is good reason for considering beauty as having a cause independent of its associated feelings. “If there were nothing,” says Dugald Stewart, “originally and intrinsically pleasing or beautiful, the associating principle would have no materials on which it could operate.”*

Nevertheless, this secondary beauty is very largely mixed up with the primary; and in many objects it is extremely difficult to separate them. It may be difficult when contemplating a beautiful female face to say how much is due to

* Philos. Essays, page 289, 4to. ed.

physical beauty, and how much to the play of expression and of all the interesting emotions and sentiments related with such expression; but we cannot doubt that there is beauty in the finely-proportioned and exquisitely-chiselled contour, in the hue of the delicately-tinted cheeks, the ruby colour of the lips, the brilliancy of the eyes, and the flow of the raven or golden tresses. It is in vain that an eloquent writer tells us that we see in those qualities only the signs of youth, and health, and gaiety—and that such objects would have no attractions for the Negro, the Mongol, the Esquimaux, or the Chippewa. To this we answer, that there are qualities in the ladies of those races which excite in the minds of their adorers the same kind of admiration as that which is produced by such faces as we have faintly sketched. Let the Negro, the Mongol, the Esquimaux, and the Chippewa, admire, to their heart's content, their sable, or yellow, or copper-coloured charmers,—we are Caucasians, and will not be told that there is no beauty in “vermeil-tinctured lips,” and in “tresses like the morn,” and in

“cheeks as fair

As rose-o’ershadow’d lilies are.”

The more familiar objects may be—that is, the longer they have been the objects of our experience—the more difficult is it to separate the accidental or secondary from the primary or essential. View a meadow in Spring, on a sunny day, verdant with grass and full of golden buttercups or cowslips—there is unquestionable beauty in the impression on sense; but the scene is full of other causes of interest—thoughts of spring, and all that spring implies, whether as a reality or a type—the memories of childhood or youth—all that poets have sung or painters have coloured;—all these associated ideas and emotions crowd into the mind so tumultuously as

almost to deprive it of its capability of recognizing the original source of delight in the scene ;—the delight which we felt as children when first we saw the meadow, and which would be of the same kind were we in mature age to behold it for the first time—the simple enjoyment of the glory of the green and gold.

Confusion, in regard to this subject, has also been caused by the consideration either of those cases in which there is no primary beauty, or beauty derived through the senses, or of others in which an object beautiful in itself loses its charm or becomes positively unpleasing by reason of the coherent emotions. A colour may in itself have great attractions ; but it may be so unfit for the surface to which it is applied that the combined influence of the colour, and the thing coloured, may be absolutely disagreeable. A strain of music, otherwise delightful, may, by recalling some disagreeable or disgusting circumstances with which it was once associated, become a source of actual pain or irritation to the hearer : but the reverse effect is, perhaps, more frequent. It is less common for an outward impression to be robbed of its beauty, than for one not in itself capable of exciting simple beauty to become invested with the beauty derived from the associated interest. Such is the transforming power of affection that the subject of it will say, “ You think him plain, but to me he is beautiful ! ” In such cases the neutral or unpleasing impression is overlooked, or regarded only as a sign of the suggested interest—the symbol being absorbed in the symbolized.

The power of mere pleasure of emotion to invest the outward cause of it with the quality of beauty is strikingly exemplified in the text, “ How beautiful on the mountains are the feet of them that bring glad tidings ! ”

When speaking of variety we glanced at the Beauty of

Expression. This kind of beauty belongs, for the most part, to the three divisions which have now passed under survey—the Intellectual, the Moral, and the Emotional. When an object in nature or art raises a feeling of beauty which either cannot be referred to form, or colour, or sound, or any other sensational quality, or in which such sensational beauty is subordinate to that which is not sensational, we say that it has the beauty of expression. Such beauty as men feel when touched by “the tender grace of a day that is dead” brought suddenly back to the mind by an outward object,—or when visited by forms which live only in the imagination, or which come at the bidding of poets, without being present to the bodily sense,—or when subdued or fascinated by those charms of mind and soul which hover over the brows, beam in the eyes, glance from the cheek, and play about the lips, without the consciousness of the presence of face or feature; such is the beauty which belongs to expression. It is this which makes the seen subordinate to the unseen, by which the soul triumphs over sense, and the ideal supersedes the real. And yet it is not the perfection of beauty; for this is only complete when all its several elements are present in due proportion and co-ordination, and working harmoniously together,—beautiful shapes and sounds with beautiful thoughts and feelings.

Why the production of emotions which seem in themselves to have no pleasurable element should be eagerly desired or accepted—as in tragedies, tales of sorrow, and terror—is a curious question, which we have no time to consider. We must admit it to be a fact that we take pleasure in the excitement of strong emotions, of whatever nature. It is constantly recognized in common experience and common language. We talk of the “love of mere excitement.” The stirring of our mental and spiritual nature has a kind of enjoyment like

that of the exercise of our muscles. The word *interesting* is often used in a sense very different from *pleasing*. An object or emotion which we like to keep before our minds is interesting. A face may be far from beautiful, and yet it may be very interesting; it may call up emotions connected with sorrow, and suffering, and bereavement,—and yet we have an interest in contemplating it; nevertheless the interest is not long sustained unless there are hints of moral qualities which excite admiration,—such as meekness, patience, and resignation.

In the *sublime* there may be no other emotions called forth than wonder and awe, yet the mind will dwell upon the object which excites them, and anxiously desire a repetition of like emotions. In the contemplation of sublime scenery the soul seems to be endowed for a time with a supernatural expansion and elevation of its nature. It exists in a sphere eminently contrasted with its every-day life, far away from all mean and vulgarizing associations and experiences;—approaching nearer to the Infinite, of which Imagination dreams and which Religion partly unveils. It is, for the time, a newer, wider, and loftier phase of being.

We have seen that the Beautiful results from certain emotions of which visual pleasure is the simplest type. But the feeling of the sublime is not resolvable into mere pleasure of sense. It may be associated with it, but there is something more. The fundamental element is the emotion of wonder tinged with awe. As pleasure and admiration belong to beauty, so wonder, awe, and reverence, belong to the Sublime.

Colour, proportion, symmetry, and variety, we have seen, are constituents of beauty. They have no essential connection with sublimity. Size, quantity, space, are the factors of the Sublime. The eye takes in a great extent of light, travels over vast breadths of shade, rises to altitudes or plunges into

depths. The broken line that would jar the sense of beauty may minister to the Sublime—as in a distant mountain-range, where the angular peaks carry the eye upwards and enhance the feeling of elevation. The *curved* line may indeed detract from the Sublime, seeing that it brings the eye downwards, and is, therefore, not suggestive of elevation. Facility, or absence of sense of effort, in one sense belongs to beauty; but the very feeling of effort, and labour, and difficulty, harmonizes with the Sublime.

From all that has been said it would appear that when we experience pleasure from objects of sight or hearing—whether present to our senses or recalled by art, poetry, or eloquence,—or from certain results of mental operations,—or from the contemplation of moral actions,—or from suggested emotions—we apply to that which is the outward cause of that pleasure the epithet Beautiful: and according to the quickness and fineness of our perceptions; or, secondly, the extent of our power of judgment, and reasoning, and imagination; or, thirdly, our sympathy with moral goodness; or, lastly, the liveliness and readiness of association in our emotions; will be the degree of our susceptibility of the Beautiful.

The sensorium is so organized as to respond to the harmonies of sight and sound of the outer world in all men of normal constitution. But the faculty has different degrees of development in different individuals, and is susceptible of almost unlimited cultivation. That, however, which is most calculated to move our wonder and admiration is the mental constitution of men of creative genius, whereby they uncon-

sciously produce such harmonies of sight and sound, and embody them in outward objects.

Very wonderful is it that the proportionate vibrations of the air, and the harmonic ratios of sculptured marble, should give so keen a sense of delight to the ear and the eye; but how much more wonderful that unconsciously in the brain of the man of genius, in the mysterious molecular actions of the ultimate vesicles of the nervous tissue, there should be evolved, without any outward agencies, those ratios of space and time which, working on the nerves and muscles of voice and hand, make themselves heard and seen in far-off lands, and far-off times, filling the world to its remotest bounds with forms of beauty and tones of melody that never die;—miraculously preserved in tombs of Thebes; buried, but disinterred in palaces of Nineveh; lingering among the oleanders of Lycia; shining, though not with “original brightness,” on the Acropolis of Athens; and thrilling through the vaults of cathedrals;—requiems of Mozart, demi-gods of Phidias, sibyls of Michael Angelo, Madonnas of Raphael, heavenly cadences of Milton;—all—answerings of the internal great ideas, emanations from those inaccessible cells where the vital force, with an inspiration and energy past man’s understanding, plies her mysterious work! Thence issuing, these wonders of form and sound are caught by the eyes and ears of other men, pressed to their hearts, shrined with their gods, mingled with the blessed sanctities of their homes, and handed down to distant ages,—so that the thought and feeling of one mind may become the beauty and the joy of all men for ever.

CHAPTER V.

IDEAL BEAUTY. ART. STANDARD OF BEAUTY.

THOUGH I am by no means so ambitious as to think of treating this subject exhaustively, a short space must be devoted to Ideal Beauty. On this subject there are many theories. According to some writers, Ideal Beauty is attained to by separating from several individual forms those parts or qualities which are most beautiful, rejecting the imperfections, and compiling, as it were, an aggregate of excellencies. In the opinion of others, Ideal Beauty is nothing but that which is derived from the most perfect specimens of the actual. The perfection of Greek sculpture, according to this view, is to be attributed to the excellence of the models and to the careful imitation of them. A third view is that we realize Ideal Beauty by heightening those qualities in which consists the specific character of the form which is to be represented. Thus, as in the human form, there are many points in which the types of the inferior animals are departed from; and as it presents features expressive of the higher and nobler qualities, these departures and expressions are in the ideal form to be more strongly marked than in any that may have been actually submitted to our observation. In all these views there is something of truth; but they do not afford the required explanations.

And yet the matter seems simple enough. Beauty depends upon the mind. There must be mind to perceive it. To a

person wanting the power of perception it is of no use to be told of exquisite colours, or of fine lines, or of harmonious combinations of form, or of the expression of related emotions, &c. If he does not perceive these things, to him the object is not beautiful, and to him there is not even *Actual* Beauty, which is beauty perceived. Now Ideal Beauty in its birth is not that which the mind perceives, but that which it imagines. No one will question that the mind makes combinations very different from anything that has ever been presented to the senses. This imaginative faculty is very unequally developed in different individuals. To its operations in some gifted minds we owe the greatest works of Art and Poetry. The poet, the dramatist, and the novelist, conceive characters infinitely more wise, and brave, and fair, and good, than any beings whom we have met with in actual life. If we have low views of composition we complain of such characters as too heroic, too angelic, too unearthly, forgetting or unaware that art does not consist in the mere imitation of the real and actual, but that it aims at educing and realizing the divine possibilities of our nature. If a person has no imagination, to him there is no ideal beauty; just as we have seen that to the person wanting the correlative sensibility there is no actual beauty. As is the mind, as is the imagination, as are the ideas, such will be ideal beauty. Raphael writes a letter to his friend telling him that he is designing a Madonna—from a model? No—but from the idea that is floating before his mind. No one who really admires the Madonna di San Sisto will dream that Raphaël had ever seen such a face as her's. His mind created it as an idea, and his hand realized it on the canvass.

I need scarcely add that in such operations the mind does not act apart from law. Influenced either by intuition or by knowledge it still, in its freest excursions, keeps within har-

monic forms and ratios, whether employed in shaping a goddess, or in designing a Madonna, or in planning a temple or a cathedral.

In the successful exercise of Fine Art the qualities of the inner and outer world are interpenetrated. He who draws or moulds only from his own mental conceptions must soon become barren and unfruitful ; but he who only copies natural objects as they are presented to his mere bodily sense will never be a great artist. Art is not subordinate to nature. It is inclusive of nature. It is nature *plus* the skill, the power, the sentiment, and the imagination of man's mind. It is nature informed with thought and infused with feeling. It is nature exalted, refined, and glorified. In a word, it is nature impregnated with humanity. Nor let us entertain for one moment the notion that to speak of nature as *humanized* is to speak of it as *lowered* ;—as if it became less divine ; as if while nature sprang direct from God, man did not ; as if whilst all that nature has done and does has been done by the direct impulse of God, man's operations, on the other hand, were entirely apart from those of God, independent, and all but antagonistic. Who made man ? Who gave him his cunning hand, and his fine discerning eye, and his “ large discourse of reason,” and his sense of beauty, and his conceptions of the Ideal Fair and Good, and his faculty of embodying them in the sight of his fellow men ? Surely we ought not to disparage the work of this very work of God,—this art-nature,—this nature fashioned, and moulded, and sculptured, and coloured, and arranged, and piled up, and set forth, by the highest nature of all,—the human hand and the human brain, those greatest of God's creations.

Art, I have said, is inclusive of Nature. It is Nature and something more. Nature is substance existing in certain forms and modes and conditions of being, full of forces which

are latent or actively at work,—and man is in the midst of them. If he is content with nature as he finds it, he is a dwarfed, undeveloped being. But it is not so; for it is obvious that there ever arises in his mind a dissatisfaction with the world about him. He has capacities of enjoyment which this rude, uninformed nature will not satisfy; his thoughts grow, and nature is compelled to grow in co-ordination with his thoughts. His food must be elaborated and refined into something more sustaining and delicate and enlivening than what he can gather from wild fruits and rivulets. The defences from frost, and wind, and rain, which he has snatched from the lower animals, will not content him; it must be woven and coloured into conformity with his sense of beauty. Mansions and palaces will supersede the hollow tree and rocky cavern. Many a generation, however, must rise and fall before that stage of development arrives in which the complicated intellectual wants and desires of civilized life are manifested. But in those distant ages it will come to pass that although he will have learnt to appreciate, in a way that his progenitors never dreamed of, the glory and beauty of the visible world, yet these are not enough for him. He must contemplate these objects under other forms; forms of his own invention, forms that have a fascination of their own; beauties culled from nature, but arranged into groups fairer and grander than nature can supply. The most beautiful of the daughters, and the stateliest of the sons of men will scarcely satisfy him; but from his fashioning hand and shaping imagination the marble will grow into diviner forms, and the canvass reflect more heavenly colours. And when he raises buildings for the worship of his Gods, they will be such as have no types, and scarcely a hint in nature, beyond that of the trunk of a tree for a pillar and of a forestshade for the

arching of an aisle. His temples, and towers, and cathedrals, are not borrowed from nature—outward nature—but are given to that nature by the higher nature which is in the mind of man. Let us refrain, then, from a hypocritical laudation of Nature and disparagement of Art. When the flowers of our conservatories are to be plucked in the woods and hedgerows, when a match for the English hunter or racehorse is caught in the prairie, when silk-worms make Cashmere shawls, when the winds chant masses of Mozart, and the birds pipe a pastorage of Beethoven, when we meet a Venus of Melos in the fields, or accost a Delphic Sibyl in the village, then let us begin to talk of Art as the mere reflex of outward nature.

Akin to the question of Ideal Beauty is that of the Standard of beauty. It is like that which concerns the standard of Truth and the standard of Morality. To a certain extent it must vary with the structure, the cultivation, the enlightenment, and the refinement of the mind. But as men are within certain limits so similarly organized or endowed as to be agreed on certain views which make a body of universal truth, on certain principles of action which conform to the idea of virtue, so there are certain laws of composition and design admitted by the best-informed minds, which cannot be violated without departing from the standard of beauty, which is in fact the catholic æsthetic faith established by those who, on account of their endowments and knowledge, have an authority in such matters. The variations of the standard of intellectual truth are, as might be expected, greater than those of virtue; and the standard of beauty, which is, as it were, supplemental to our life, varies still more than that of truth. Races and ages affect all three; but given the same race, and an equal amount of culture and freedom from traditions, the amount of divergence in the standards will be less observable.

CHAPTER VI.

USES OF BEAUTY.

FOR all this world of Beauty in Art and Nature there might seem to be a sufficient reason in the happiness resulting from the delighted exercise of man's faculties in perceiving the one and in producing and admiring the other. But there is more than this; for the Fine Arts may be useful, in the same sense as the more expressly Useful Arts, by aiding the accomplishment of some particular purpose.

Thus in portraits, busts, and statues, they may preserve the features and forms of men who had won the admiration or love of their friends and contemporaries, and may at the same time represent the feelings of the latter; or in frescoes, and bassi relievi, they may commemorate great events and actions which have determined the fates of heroes or of nations. In the performance of such functions Art is a sort of durable embodied visual language, telling in representative forms what otherwise would have needed oral or literal communication. And in this ministration it may or may not at the same time give that pleasure which is purely artistic or æsthetical, just as facts may be told in words that are either eloquent or simply exponent. But it rarely happens that works of art are required for the bare purpose of representation or commemoration. They have generally been expected to add dignity to the subject. The portrait and the historic painting, the statue and

the basso relievo, must represent their subjects so that ideas of beauty and sublimity shall at the same time enter the mind, as when it is under the corresponding influence of eloquence and poetry. And this is decoration in its largest sense. Only those men and those achievements are commemorated which we hold in veneration or affection. Art in representing them must excite associations worthy of them—impressions of beauty and grandeur.

The conjunction of the Beautiful with whatever is of worth, honour, dignity, or even of value, in our daily life, is evidenced in the works, manners, and customs of mankind. The splendours of dress, the shaping of instruments and utensils, the decorations of houses, of public buildings, of temples and churches, all give testimony to our instinctive association of the Beautiful with whatever we approve, value, admire, or venerate. The mere finishing of a common work of handicraft with such neatness and polish as are agreeable to the eye, and therefore impart a kind of beauty to the object, does homage to this principle. In obedience to it mankind array themselves in their best apparel at their feasts and solemnities; and they require that buildings for the transaction of any important affairs shall be something more than mere shelters from the elements, or screens from intrusion. And there is a reciprocal action from the objects. The beautiful forms and colours which were originated to satisfy the mind, when wishing to express its veneration or admiration for some person or object, will, by the inevitable force of association, recall the object with its correlative emotions.

This principle is well illustrated in buildings devoted to certain public objects. Thus it is held suitable that when governing authorities hold their councils for the good of the community they should be assembled in buildings the struc-

ture and decoration of which are such as to excite feelings of admiration or respect. If it be a building occupied by the highest powers of a great nation, it is hardly possible to erect an edifice commensurate with the wishes or expectations of the people. The mere accommodation of senators in rooms well lighted, airy, and of pleasant temperature, would be far below what satisfies a great nation. There must be spacious antechambers, lobbies, grand corridors, lofty domes, and enormous towers, which have nothing to do with convenience, but which are thought fitting, and are eagerly demanded and cheerfully paid for, because they answer to those feelings of awe, and admiration, and attachment, which are associated in patriotic minds with anything so august as the assembled wisdom and concentrated government of the country.

But still more striking is the operation of this law of our being in the buildings which are consecrated to religion. Whatever form the religious feelings and ideas have assumed, and in connection with whatever faith, whether sprung from the simple natural intuitions of the race, and blended with the fictions of poets, or informed with the reflections of philosophers, or whether they have been raised, refined, and purified by the teachings of direct Revelation, they severally require (with one singular exception) that the services of their worship, the ceremonies which symbolize the supernatural parts of their religion, the declarations of belief in their solemn verities, the chanting of their hymns of praise, the oblation of their litanies, the intercessions of priests, the eloquent exhortations of ministers,—whatever is uttered, whatever performed in public manifestation of the religious sentiment,—must require a building which shall be specially set apart for the purpose, and which in its structure, its arrangements, and its ornaments, shall answer to and harmonize with the greatest

and holiest feelings and conceptions of which our nature is susceptible. Here ought to arise in our minds the highest awe and wonder, the purest admiration and love ; and everything around us should correspond with those emotions. The light should by its dimness be fitted to suggest to the worshipper that he has passed from the common light of day and his worldly transactions ; yet it should be tempered and softened with those hues which give solemnity and tenderness to the feelings ;—the various members of the building should minister to the sense of grandeur ; pillars, for example, by their massiveness as parts, giving hints of the greatness of the whole ; and there should be intimations of spaciousness and elevation as the eye wanders through vistas of arches, or is invited by beautiful shafts to look upwards and heavenwards. And if my readers have gone with me in what I have ventured to propound, in connection with the symmetric laws of nature, they will admit that the harmonic combinations of art in sight and sound may tend to place the mind in an attitude fit for the reception of the highest truths, and attune it to a sympathy with the most hallowed feelings.

Now I am not presuming here to say whether these natural tendencies of the mind to seek such æsthetical aids to the religious feelings ought to have free scope, or whether they ought to be repressed. About this the wise, the learned, and the pious, have differed greatly, either because of the diversity of their theological doctrines, or because of the great difference in the degrees of development or culture which the æsthetical element has attained in their respective minds. On the one side it has been held that human nature is so apt to turn away from devotional feelings, or so ready to change them for mere worldly emotions, that it is impossible to multiply to excess those influences which tend to maintain them ; and that, with the majority of mankind, reason, and conscience, and faith, and

duty will not avail, unless assisted by sense and imagination ; and that even in the apparently simplest forms of worship, where ceremonial pomp and sacerdotal functions are most repudiated, it will be found that the excitement of the psalmody, and of the burning words of pulpit orators, kindling the fancy and imagination, and stirring up the tragic or pathetic emotions, have an effect analogous to that which is condemned in the more æsthetical modes of worship : but, on the other hand, it is urged that what are called helps by sense are, indeed, hindrances to the devotional feelings, and that the mind, instead of rising above the earth to the higher and holier contemplations, is detained there by the seductions of human art under a false guise—that it is not when the eyes are feasting on delightful colours and beautiful forms, and when the ears are charmed by melody—it is not then that the still small voice of conscience can be best listened to, or a careful review be taken of our thoughts and actions, or the reasonings and precepts of religious teachers be best followed or enforced. It is not for me to say how far such advocacy may err on either side. I am only endeavouring to examine the philosophy of the subject.* But I cannot but think that there is a natural affinity between the Beautiful, and the Good, and the Holy. It is but too true that these elements may exist separately,—for as there may be a dreamy unproductive theopathy, or superstition devoid of morality ;—and as there may be a hard cold virtue unwarmed and unsoftened by devotion, so there may be a sense of beauty without either virtue or religion. It is painful to think of the evil deeds which have

* Those who wish to go fully into the Religion of Art should read the eloquent and well-reasoned chapters on the subject in Mr. Young's volume on Pre-Raphaelitism, which has been so highly eulogized by competent judges as to need no suffrage of mine.

been planned and perpetrated in the presence of a beauty thus profaned. In the remains of some ancient cities we have but too many proofs, even now, how little the loveliness of nature, or of the forms and colours of art, availed to prevent the inhabitants from indulging in the grossest vices. But beauty alone will not even avert the still more hideous deeds of cruelty. If the amphitheatres of Rome, where gladiators fought, and lions and tigers sprang on martyrs, if the cathedral towers of Germany, Belgium, and Normandy, and the arches of our ancient colleges, once reddened by the flames of penal fires, nay, if the "Alpine mountains cold," and the lovely banks of the Loire, could tell all that had been done in pollution of their grandeur and beauty, it would seem but too plain that there have been times when virtue, love, and pity received but little assistance from the Sublime and the Beautiful. If men are depraved and habituated to vice, no gentle motive will check them: but when inclined to virtue, they are very susceptible of auxiliary influences (and virtue needs to be helped); and it is in such cases that beauty, and religion, and virtue seem to uphold and strengthen each other.

But as it is difficult to measure the influence of admonitions which at the time of their utterance seem ineffectual, of the voice of loving persuasion to which deaf ears may for a time be turned, of reproofs of conscience which may for a time be hushed, yet as we know that in other hours they may come back with all the melting or appalling force of pathos and remorse, even so may return the shapes of beauty once associated in the mind with all that is virtuous and venerable. The melody of the psalm which tuned some of his earliest lessons in virtue and religion may yet some day touch the heart of a hardened criminal. And who knows but that the half-peni-

tence of rough freebooters of the olden times may have perhaps been aided by like influences when they lay on some distant shore languishing with fever, or smarting with wounds; —who knows but that among the shapes and signs beckoning them back to goodness, not the least admonitory or persuasive may have been the image in the mental eye of some holy pile, like that of our venerable Redcliffe, surrounded with memories of innocent youth, and sacred counsel, and the love of friends and kindred!

Should it be thought, however, that we are somewhat straining the function of beauty, in making it the upholder of the moral sense and the helpmate of religion, yet it will not be denied that it may be one, and not an uninfluential one, of the many motives which finally determine action. To a character hovering over the line which marks off good from evil, swayed to this side by temptations and seductions, to that by conscience and duty, the sense of what is *fair* as well as *good* may afford the preponderating motive.

But, not to press this view, there are actions and emotions which do not belong to the merely virtuous, and the merely just or benevolent, but which take their tone and colour from the sense of the Beautiful. Heroic deeds, the graces of life, the refinements of feeling, and all that is understood by such terms as nobility of soul and elevation of character, are more or less allied in their nature, their origin, and their operations, to that sentiment which we have been engaged in considering. Think for one moment what the world would be without it. Goodness, love, worship, would remain. Without these, indeed, it would be utter darkness and devildom. But where is the charm of life? Where are the flowers of the world, where the hues of rising and setting suns, and where the nightly splendours? Where are the spells of melody, where the

fascination of eloquence, the inspirations of poetry, the colours of romance, the revelations of art? Gone; and with the loss of all that glory, and grandeur, and beauty, it must, as human hearts and minds are usually constituted,—it must be more difficult to be good, and loving, and holy. The old Greeks held the good and the fair in one word, *καλόν*: and thus sang one of them more than 500 years before our era:—

“ Muses and Graces, daughters of high Jove,
When erst ye left your glorious seats above,
To bless the bridal of that wondrous pair,
Cadmus and Harmonia fair,
Your voices pealed a divine air :
 ‘ What is good and fair
 Shall ever be our care.’
Thus the burthen of it rang :
 ‘ That shall not be our care,
 Which is not good and fair.’
Such were the words your lips immortal sang.”*

* See Appendix III.

APPENDIX.

I.—Referred to at p. 20.

Construction of a Diagram of the front Aspect of the external form of the Human Figure, taking the right angle as the fundamental angle.

LET the line A B (fig. 1, plate IV.) represent the height of the figure to be constructed. At the point A, make the angles C A D ($\frac{1}{3}$), F A G ($\frac{1}{4}$), H A I ($\frac{1}{5}$), K A L ($\frac{1}{8}$), and M A N ($\frac{1}{7}$). At the point B, make the angles K B L ($\frac{1}{8}$), U B A ($\frac{1}{12}$), and O B A ($\frac{1}{14}$).

Through the point K, in which the lines A K and B K intersect one another, draw P K O parallel to A B, and through C F H and M, where this line meets A C, A F, A H, and A M, draw C D, F G, H I, and M N perpendicular to A B; draw also K L perpendicular to A B; join B F and B H, and through C draw C E, making with A B the angle ($\frac{1}{2}$), which completes the arrangement of the eleven angles upon A B; for F B G is very nearly ($\frac{1}{10}$), and H B I very nearly ($\frac{1}{9}$).

At the point *f*, where A C intersects O B, draw *f a* perpendicular to A B; at the point *c*, where A K intersects O B, draw *c d* perpendicular to A B; and through the point *i*, where B O intersects M N, draw S *i* T parallel to A C, and S *b* perpendicular to A B.

Through *m*, where S *i* T intersects F B, draw *m n*; through β , where S *i* T intersects K B, draw βw ; through T draw T *g*, making an angle of ($\frac{1}{3}$) with O P. Join N P, M B, and *g* P, and where N P intersects K B, draw Q R perpendicular to A B.

On A E, as a diameter, describe a circle cutting A C in *r*, and draw *r o* perpendicular to A B.

With A *o* and *o r* as semi-axes, describe the ellipse A *r e*, cutting A H in *t*; and draw *t u* perpendicular to A B. With A *u* and *t u*,

as semi-axes, describe the ellipse $A t d$. On $a l$, as major axis, describe the ellipse of $(\frac{1}{3})$.

From a centre Z , describe a circle whose circumference shall touch $C D$, $C F$, and $A F$. With the same radius describe a circle from the centre X , so that its circumference shall touch $M N$ and $B U$. With the same radius describe a circle from the centre M , and another from the centre T . With the same radius describe a circle from the point x in $Q R$, whose circumference shall touch $N P$; and with the same radius describe a circle from the centre y , where the circumference of the last circle cuts $Q R$. With the same radius describe a circle from the centre V , whose circumference shall touch $K B$ and $B P$; and with the same radius describe a circle from the centre j , whose circumference shall touch $B P$.

From a centre s describe a circle whose circumference shall touch the lines $H K$, $H I$, and $A K$; and with the same radius describe a circle from the centre e in $A K$, whose circumference shall touch $H I$. With the same radius describe a circle from the centre h in $r o$. With the same radius describe a circle from the centre k , whose circumference shall touch $F G$ and $A K$. Draw similar lines and describe similar circles on the other side of $A B$, and the diagram is complete.

*Construction of a Diagram of the side Aspect of the external form
of the Human Figure.*

On one side of a line $A B$ (fig. 2, plate IV.) construct the rectilinear portion of a diagram the same as fig. 1. Through i draw $W Y$ parallel to $A B$, and draw $A z$ perpendicular to $A B$. Make $W a$ equal to $A a$ (fig. 1), and on $a l$, as major axis, describe the ellipse of $(\frac{1}{4})$. Through a draw $a p$ parallel to $A F$, and through p draw $p t$ perpendicular to $W Y$. Through a draw $a f$ parallel to $A M$, and through f draw $f u$ perpendicular to $W Y$.

Upon a diameter equal to $A E$ describe a circle whose circumference shall touch $A B$ and $A z$. With semi-axes equal to $A o$ and $o r$ (fig. 1), describe an ellipse with its major axis parallel to $A B$, and its circumference touching $O P$ and $z A$. With a radius the same as that of the circle Z (fig. 1), describe from a centre, Z , a circle whose cir-

cumference shall touch W Y and C D; describe a circle with the same radius, having its centre X, in W Y, and its circumference touching that line in i ; and with the same radius describe a circle from a centre, q , in M N. With a radius the same as that of the circle e (fig. 1), describe from a centre, e , a circle touching W Y and H I, and from a centre, s , in its circumference, describe with the same radius another circle through e , and touching H I. The circles x, y, j , and V, are the same as in fig. 1.

II.

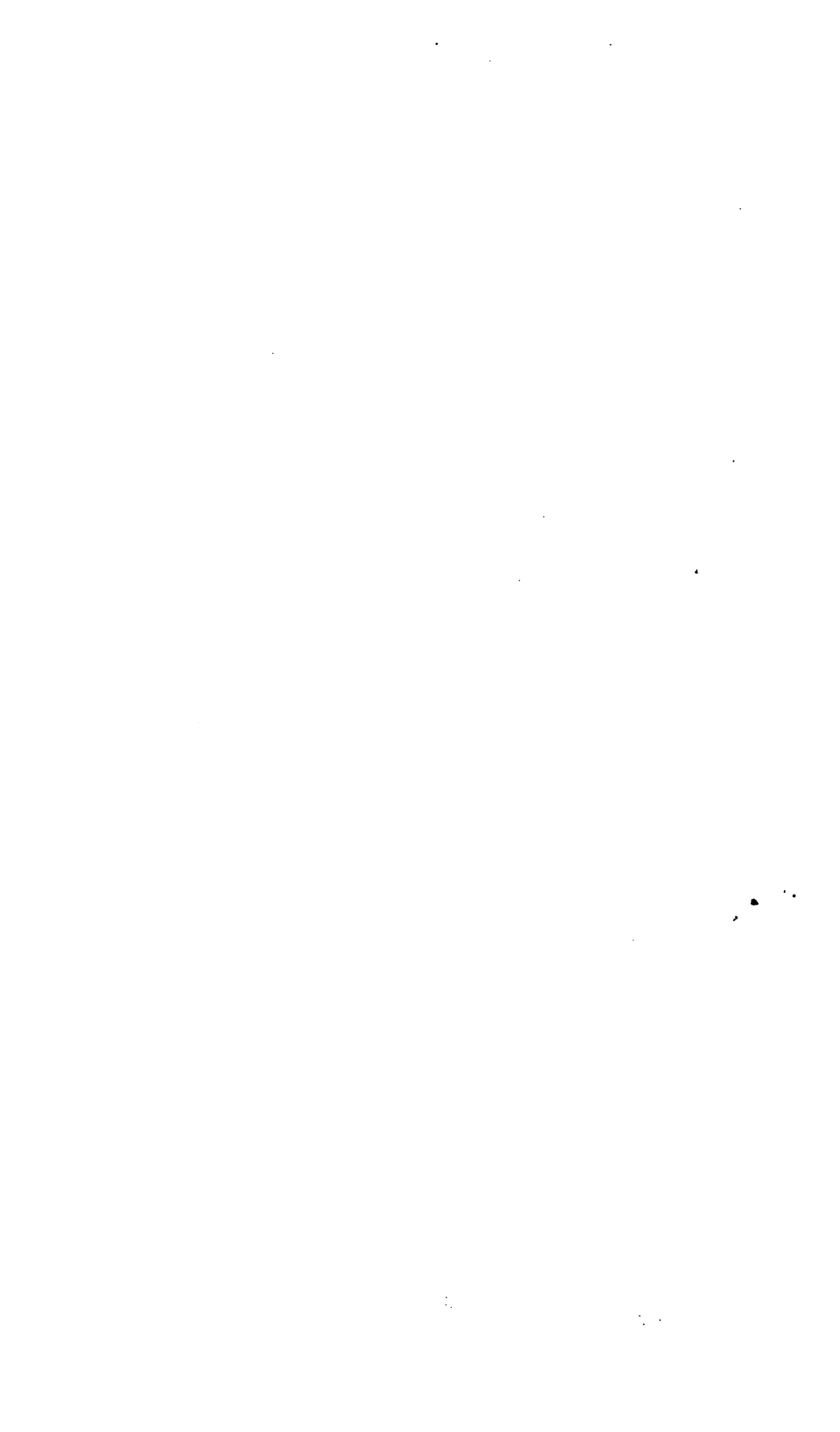
Catalogue of Works by David Ramsay Hay, F.R.S.E.

- The Laws of Harmonious Colouring. 1828.
 The Practice of House Painting. 1847.
 The Natural Principles and Analogy of the Harmony of Form. 1842.
 Proportion, or the Geometric Principle of Beauty Analysed. 1843.
 An Essay on Ornamental Design. 1844.
 The Principles of Beauty in Colouring Systematised. 1845.
 A Nomenclature of Colours. 1846.
 First Principles of Symmetrical Beauty. 1846.
 On the Science of those Proportions by which the Human Head and Countenance, as represented in Ancient Greek Art, are distinguished from those of Ordinary Nature. 1849.
 The Geometric Beauty of the Human Figure defined, to which is prefixed a System of Æsthetic Proportion applicable to Architecture and the other Formative Arts. 1851.
 The Natural Principles of Beauty as defined in the Human Figure. 1852.
 The Orthographic Beauty of the Parthenon referred to a Law of Nature; to which is prefixed a few Observations on the Importance of Æsthetic Science as an Element in Architectural Education. 1853.
 The Harmonic Law of Nature applied to Architectural Design. 1855.
 The Science of Beauty as developed in Nature and applied in Art. 1856.

The reader who wishes to make such a selection from these works as may enable him to acquire a comprehensive view of Mr. Hay's theory will do well to study the works entitled "The Geometric Beauty of the Human Figure," "The Orthographic Beauty of the Parthenon," and "The Science of Beauty."

III.

Μοῦσαι καὶ Χάριτες, κοῦραι Διός, αἱ ποτε Κάδμου
 ἐς γάμον ἐλθοῦσαι καλὸν αἰείσατ ἔπος.
 "Ὅττι καλὸν φίλον ἐστί· τὸ δ' οὐ καλὸν οὐ φίλον ἐστίν.
 τοῦτ' ἔπος ἀθανάτων ἦλθε διὰ στομάτων.—Theognis.



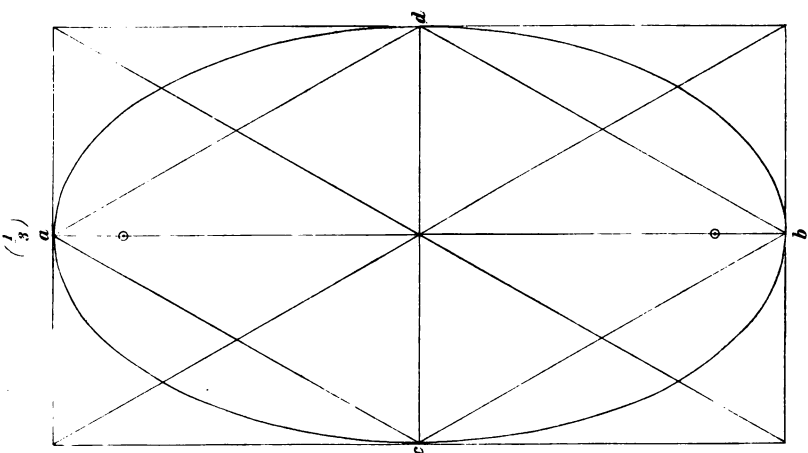
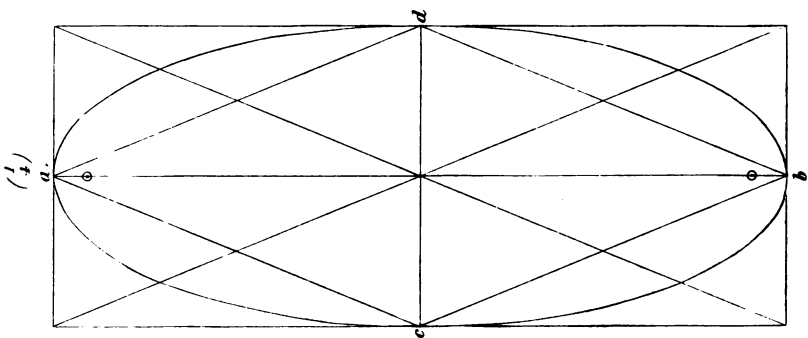
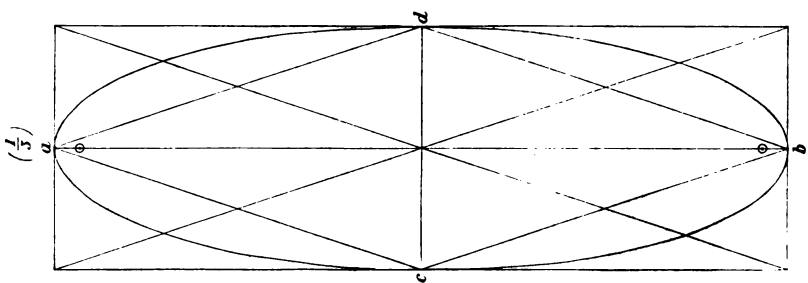
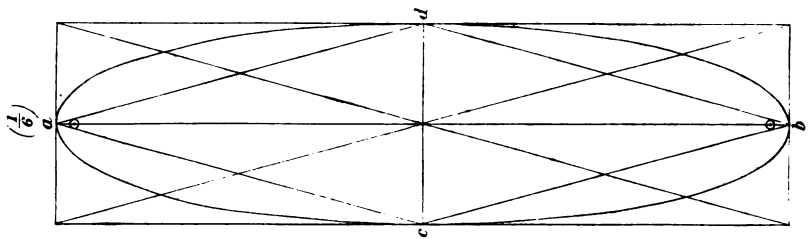




Fig. 1.

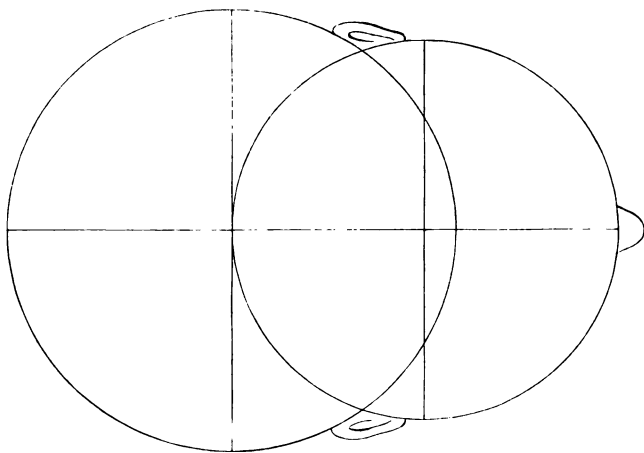


Fig. 2.

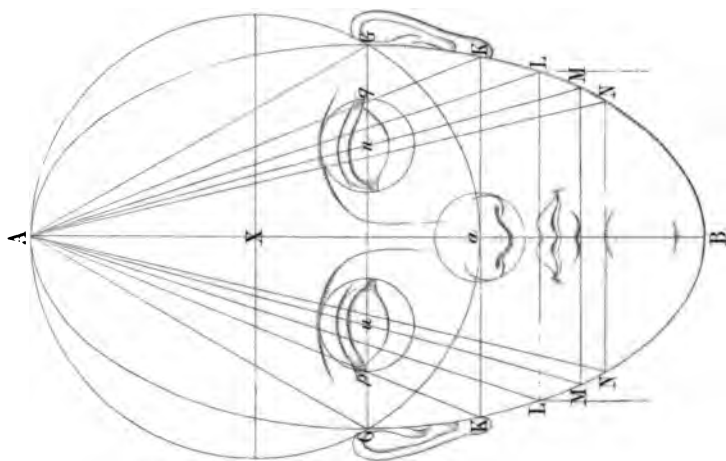


Fig. 3.

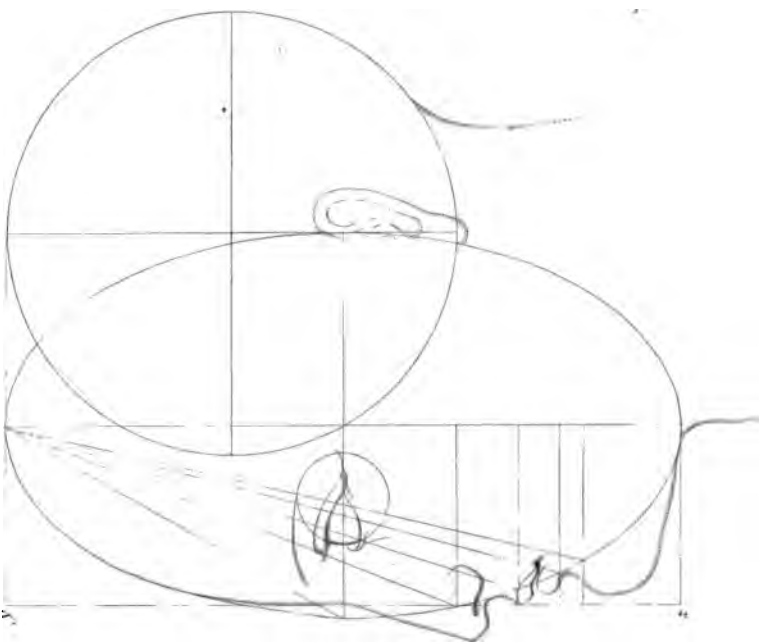


Fig. I.

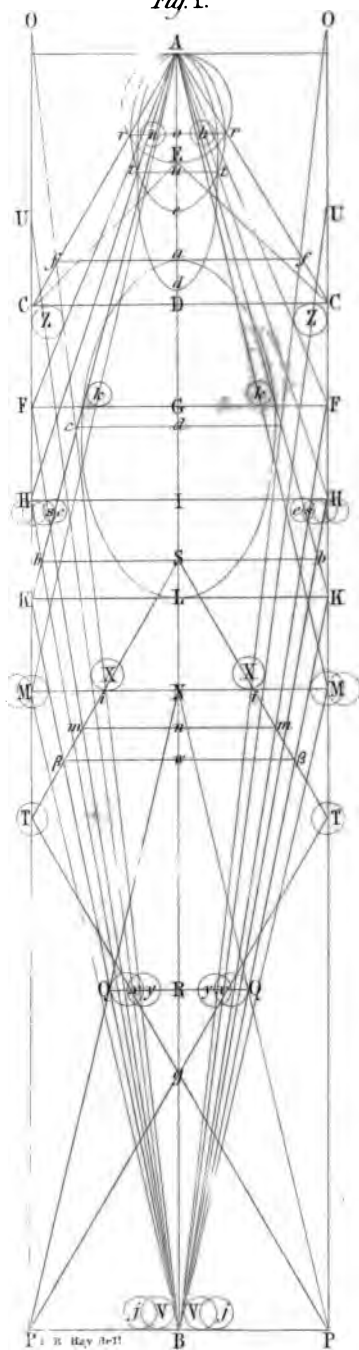


Fig. II.

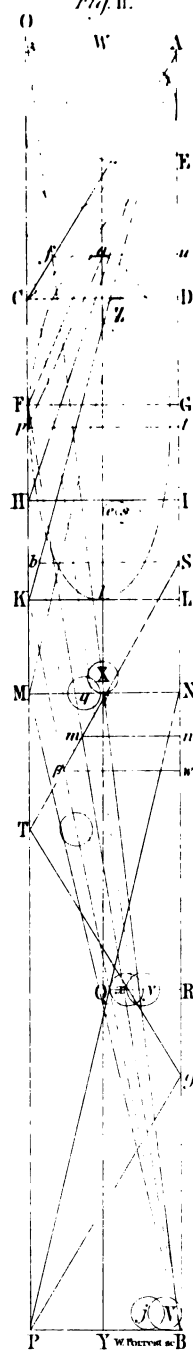
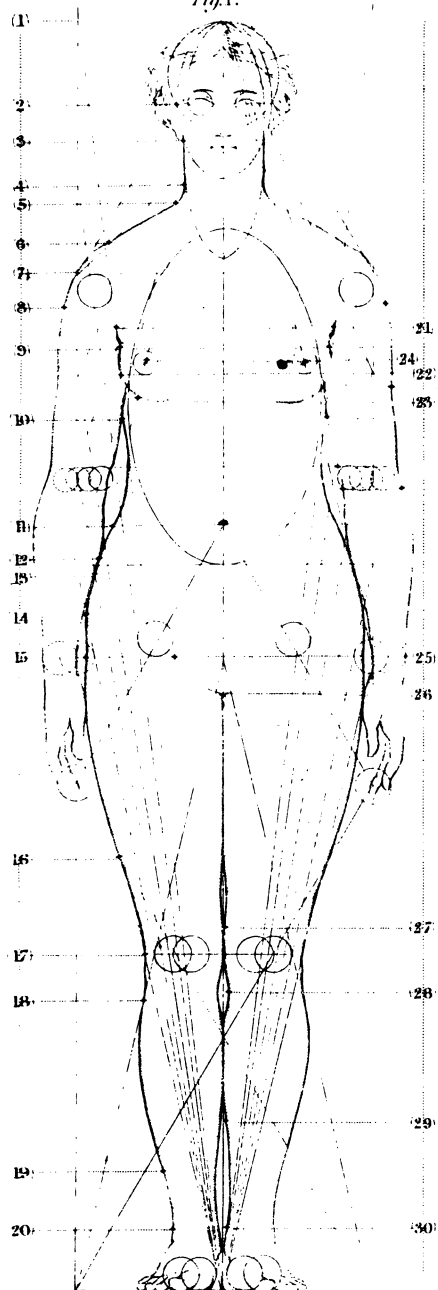


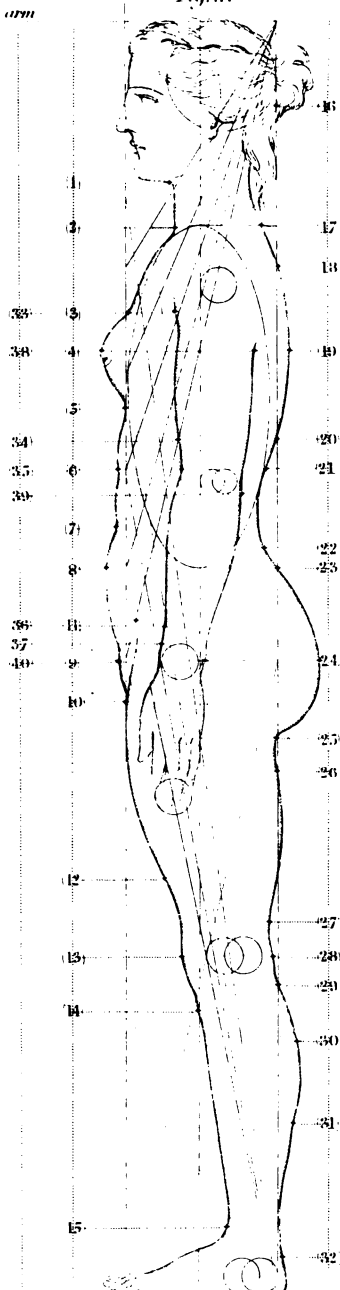


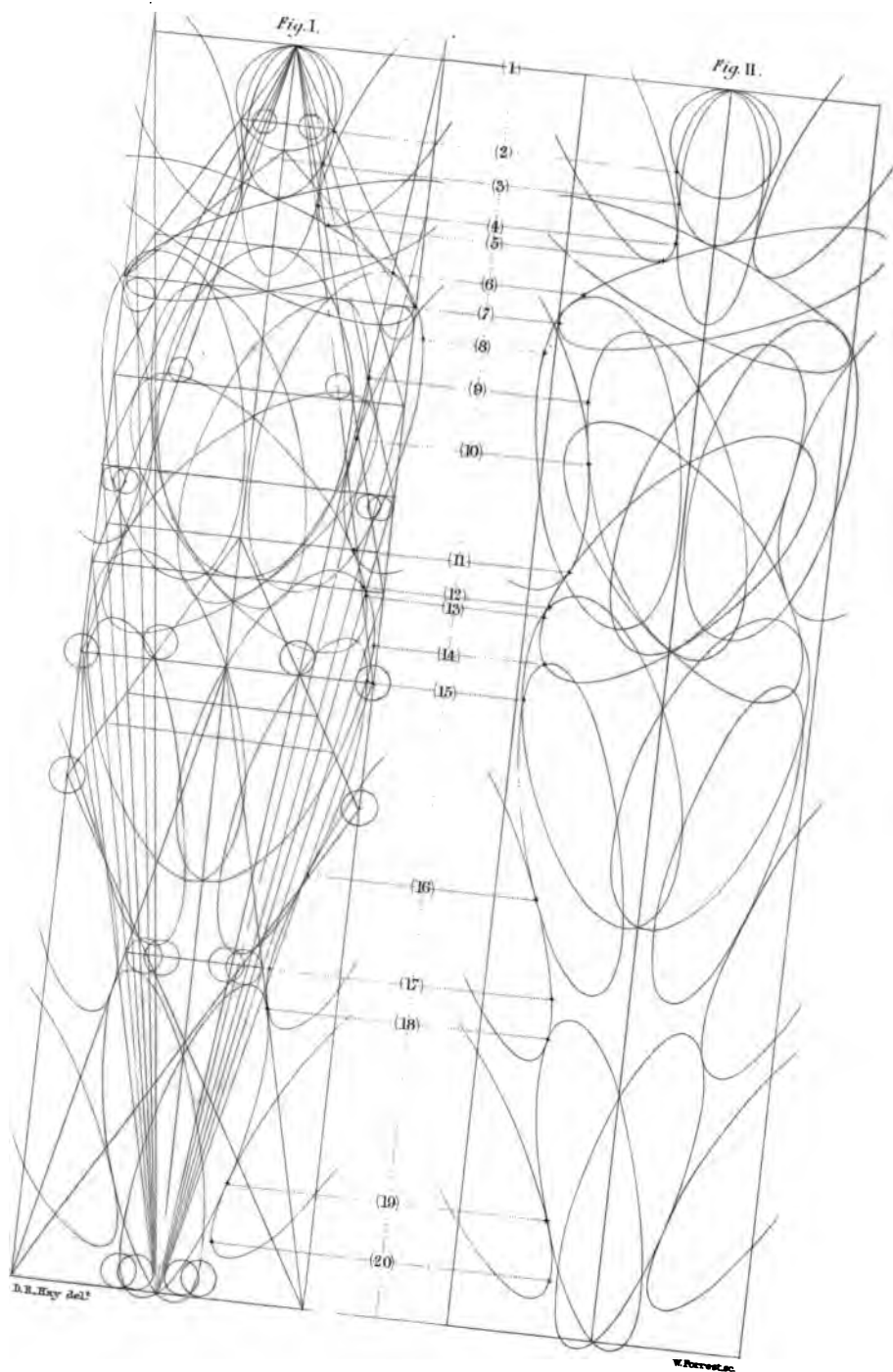
Fig. I.

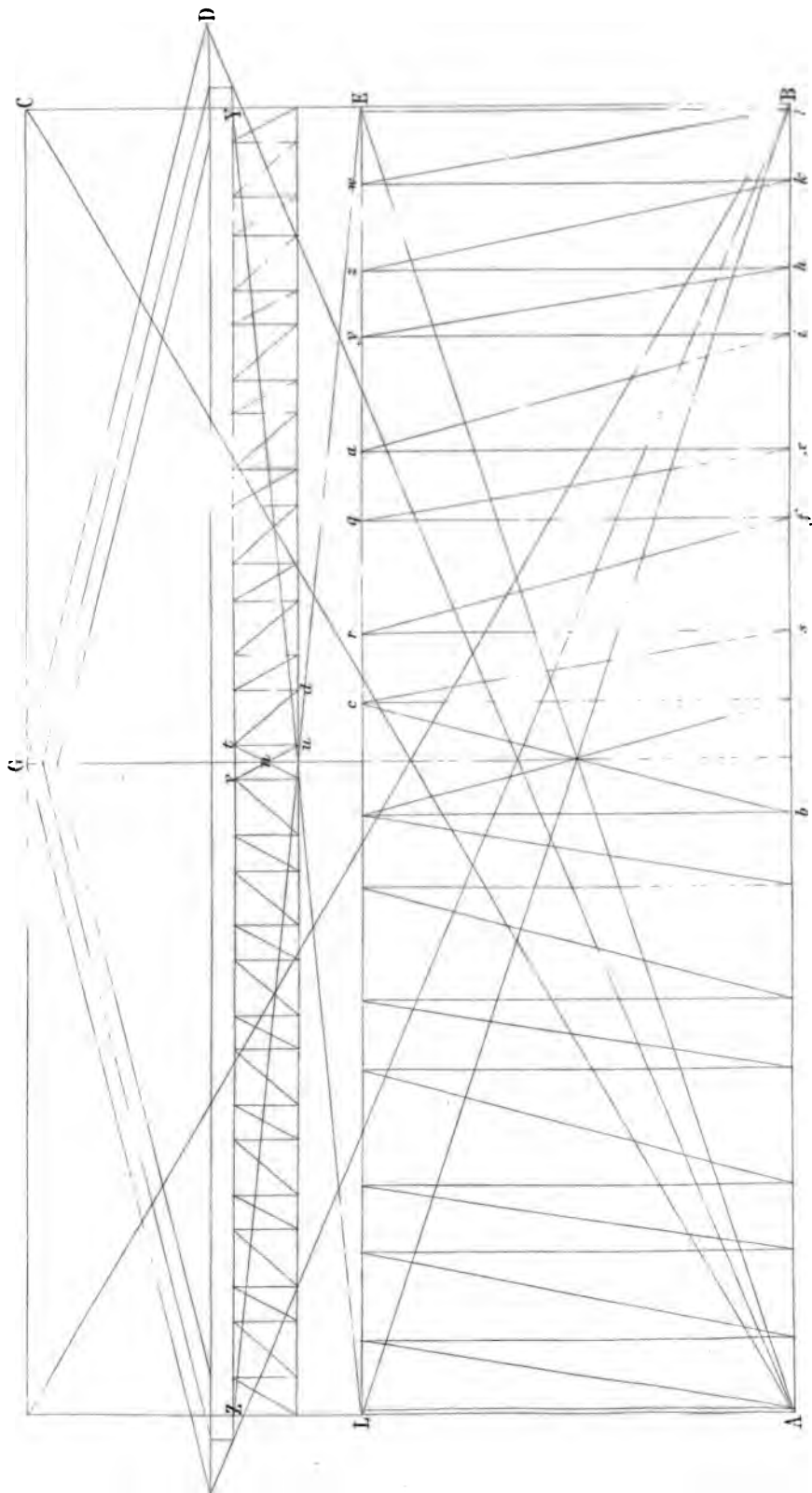


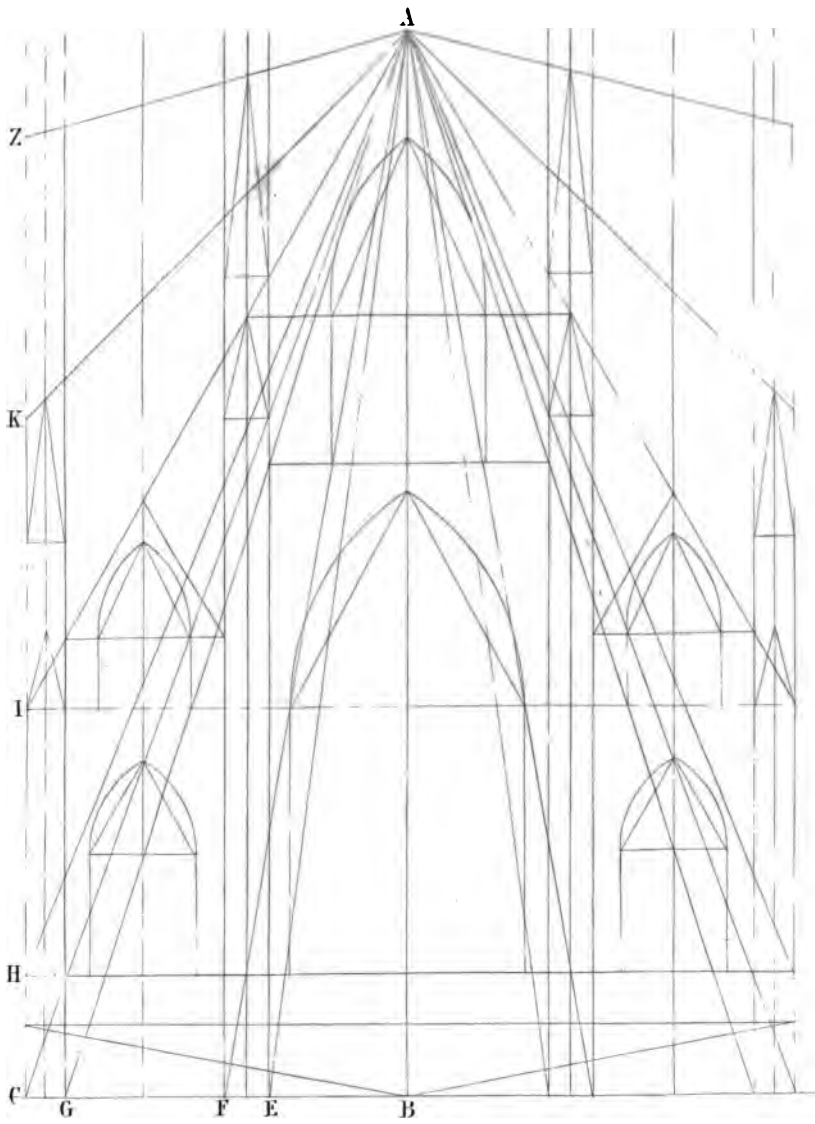
arm arm

Fig. II.









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